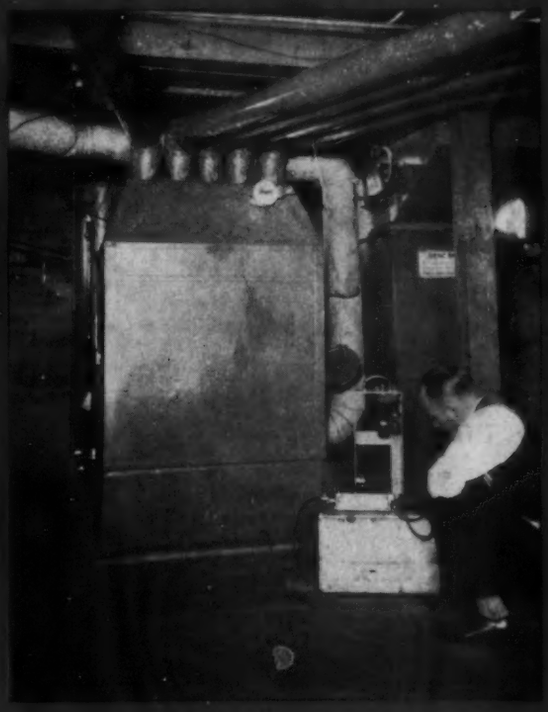
AMERICAN ARTISAN

APRIL
1943



RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING • SHEET METAL CONTRACTING

ESTABLISHED
1880

OUR HAT IS IN THE RING WITH HIS!

Yes, our hat is in the ring with Uncle Sam's. And it is in there to stay until after the war. This means, of course, that we can't make or sell you LAMNECK Prefabricated Duct and Fittings now—that we won't be able to until the war is won, and once again we are privileged to resume the grand and glorious American Way of Life.

Right now we are doing our full bit to hurry that day along. Our plant is converted to war work—100%. Airplane parts and assemblies are moving off our production lines by the thousands. And, believe us, we are making them good—extra good—putting into them a full measure of that famous LAMNECK Quality of which we are so proud.

We'll be around to see you again after "V" Day—a day that will come faster if we all keep our shoulders to the wheel now, and continue buying more and more War Bonds.

LAMNECK PRODUCTS INC. Middletown, Ohi

Simplified Furnace Pipe and Fittings and Prefabricated Duct and Fittings for all Types of Residential Gravity and Forced Warm Air Heating and Air Conditioning Systems.

Serving Big Business and serving it continuously...

U.S. AIRCO

can produce and deliver air handling equipment for factories, army bases, ships

VAST Industrial Plants, newly-created to provide the machines and supplies of War, put the tools of Air-Conditioning to steady use. To meet the varied requirements of Industry USAIRCO Engineers are called upon to design equipment able to deliver to performance constantly.

Today's business permits no slack time—no on-and-off operation. The pitch of production is keyed to 24 hours steady work. To help men and machines hold this pace, USAIRCO air handling equipment serves a vital need. It helps to keep working atmosphere constantly comfortable.

USAIRCO Blowers, unit heaters, coils and air washers serve the increasing demands of Industry with experience of 19 years in the air conditioning field.

Complete data and prices are available—as well as engineering counsel for your job.

UNITED STATES AIR CONDITIONING CORPORATION

Manufacturers of the most complete line of air-handling equipment. Factory representatives in principal cities.

NORTHWESTERN TERMINAL • MINNEAPOLIS, MINNESOTA

★ **HEAVY BLOWERS** ★

Backwardly curved blade type shown (also blowers with forwardly curved blades), also available in types and capacities ranging from 2,000 to 70,000 c.f.m. Used currently by many Government Services for large scale air handling jobs. Made in single and double inlet, and in a variety of air discharge arrangements.

AIR WASHERS

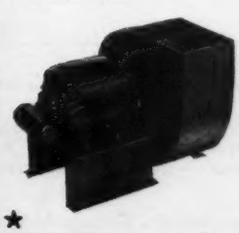
Single and double stage air washers are made in various capacities for all needs. They are used in installations where dependable equipment is required for air cleaning, cooling, humidifying or dehumidifying. Air Washers operate with cold water or refrigerating apparatus. For special installations such as shell-loading rooms or food-processing plants, double stage Air Washers help maintain safe atmospheric conditions at all times.

UNIT HEATERS

Suspension type small area heater for use with steam. Deflecto Grilles distribute heat where needed. This type of heater is ordinarily used to supplement central systems in large Defense plants, Army camp barracks and community buildings.

"E" BLOWERS

Belt-driven exhaust blower for light duty work where static resistance is low. Designed and built to meet today's requirements for flexible operation. Type "E" Blowers are easy to service—are available in several discharge arrangements. An adjustable pulley permits 30% speed variation to handle air as required in different installations.



"SU" BLOWERS

Direct-driven exhaust blowers are designed for use where space is too limited for a belt-driven exhauster. Built strongly, mounted rigidly to prevent vibration. Slow speed motor operates the wheel. A type of blower that is efficient for exhaust applications in warehouses, factories, barracks or mess halls.

★ ★

AMERICAN ARTISAN

WITH WHICH ARE MERGED

FURNACES AND SHEET METALS

AND

Warm-Air Heating

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

J. D. Wilder, Editor — A. A. Kennedy, Assistant Editor

Vol. 112, No. 4 — April, 1943 — Founded 1880

CONTENTS

Summer Heating Plant Service 17
Interpretations, Amendments to Existing Orders 18
Kruckman—Nugent's Buy Now—Get Later, Plan 20
The New PD-1A Application Form 22
The National Warm Air Ass'n History (Part 1) 24
On Our Industry's Front 26
Nat'l Warm Air Heating & Air Conditioning Ass'n Page 28
The Michigan Ass'n Convention 53
The New York State Convention 55
Association Activities 57
New Products 58
New Literature 61
News Items 63
With The Manufacturers 64
War News Section 82

THE RESIDENTIAL AIR CONDITIONING SECTION

If You Have Blowers in Stock, Sell Them 31
Minimum Weight Defense House Heating System 32
Cummings Summer Service for Oil Burners, Stokers 35
Simplified—But Better—Gravity Systems (Part 3) 36

THE SHEET METAL SECTION

More Machines On the Same Fan and Motor 41
Incentives System for Production Control 44
Reconstruction in Lead Alloy Sheet 48
Metal Screws in Asbestos-Cement Board 50

THERE are two interesting developments summarized in this issue which, probably, will have a decided influence on operations during the rest of 1943.

❖

On page 22 we summarize the highlights of the new PD-1A form which requires more information than the old form and, of most interest asks that the material applied for shall not be designated by a trade name, but by some metallurgical definition.

We wonder if the men who prepared this PD-1A form realize just how troublesome this section is apt to be. Few persons know any metallurgical definition of our popular materials. And, after we dig out some such definition, how will WPB know what we are talking about?

To help in this problem we sent letters to material manufacturers and asked for the simplest metallurgical definition of their materials. These suggestions have been tabulated on page 23, but we can't guarantee that WPB will accept these definitions. You'll have to try them and see.

❖

Heating contractors with blowers in stock were disturbed last month by large newspaper advertisements of the mail order houses offering furnace blowers to home owners without any priority.

Immediately we dug into this to find why the mail order houses could sell blowers when contractors could not. The result of our digging are reported on page 31. In brief, if you have blowers in stock you can sell them. You cannot order blowers; manufacturers cannot ship; but anything you have, you can sell.

❖

And any firm, manufacturing metal products will do well, we think, to study Ernest Zideck's suggested incentives plan beginning on page 44. How to pay good help more money and make employees strive to produce more is one of the pressing problems of the moment.

Member of Audit Bureau of Circulations — Member Associated Business Papers, Inc.

Published monthly by Keeney Publishing Company, 6 N. Michigan Ave., Chicago, Ill., U. S. A. Copyright 1943 by Keeney Publishing Company. Publisher—Frank P. Keeney; Manager—Chas. E. Price. Advertising staff: Wallace J. Osborn, New York City, Telephone—Murray Hill 9-8293; J. D. Thomas, Chicago, Telephone—State 6916; Robert A. Jack, Cleveland, Telephone—Yellowstone 1540; J. H. Tinkham, Los Angeles, Telephone—Richmond 6191.

Yearly Subscription Price—U. S. and possessions, Canada, Mexico, South America, Central America, $2.00; Foreign, $4.00. Single copies, U. S. and possessions, $.25. Back numbers, $.50. January, 1943, Directory issue, $1.00 per copy. Entered as second-class matter, July 29, 1932, at the post office at Chicago, Illinois, under the act of March 3, 1879.

FOR SHEET METAL AND ROOFING SUPPLIES

Are you using sheets and sheet metal working tools and machinery for production of defense contracts? Do you require asphalt roofing and supplies for your Spring work? Then, call your nearest OSBORN warehouse for your needs.

Our stocks are more complete today than they have been in some months and the chances are good that we can supply the exact items you want. Equally important, we can give you the prompt service which today's war requirements demand.

Make a note of the phone number of the nearest OSBORN warehouse so that you'll have it when you again want to order materials in a hurry.

STEEL, IRON, STAINLESS, ALUMINUM, COPPER AND PERFORATED SHEETS

TROUGH, GUTTER AND CONDUCTOR PIPE

WARM AIR FURNACES

TOOLS AND MACHINERY

ASBESTOS AND ASPHALT ROOFING AND SIDING

THE J. M. & L. A.

OSBORN Co

CLEVELAND, OHIO

BUFFALO • CINCINNATI • DETROIT

Manufacturers—Distributors of Metals and Metal Products

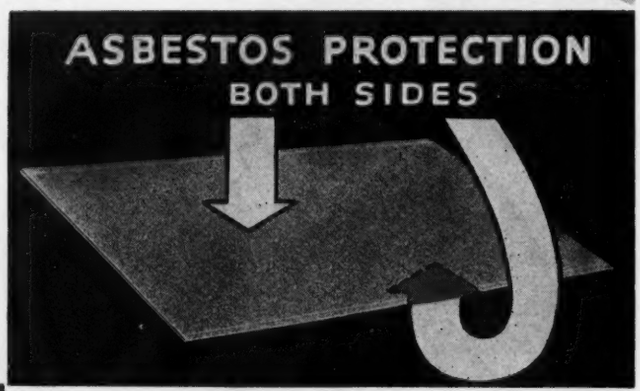
A DEPENDABLE SOURCE OF SUPPLY FOR 84 YEARS

Insist on Genuine

As a full and unlimited substitute for sheet steel in the Heating and Ventilating field.

A.R.A. Sheets lend themselves to easy fabrication in your own shop into sturdy ducts, smooth strong round pipe and intricate, complicated fittings.

This sheet has been tested, approved and pronounced the most satisfactory and safest sheet of its kind.



The unusual strength built into A.R.A. Sheets increases its adaptability to many unusual uses. A.R.A. Sheets will withstand a blow of over 200 lbs. per square inch.

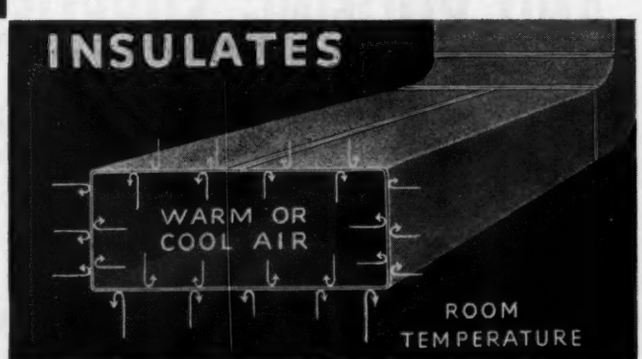
You can depend on every square foot of A.R.A. Sheets as being uniform and of the highest quality.

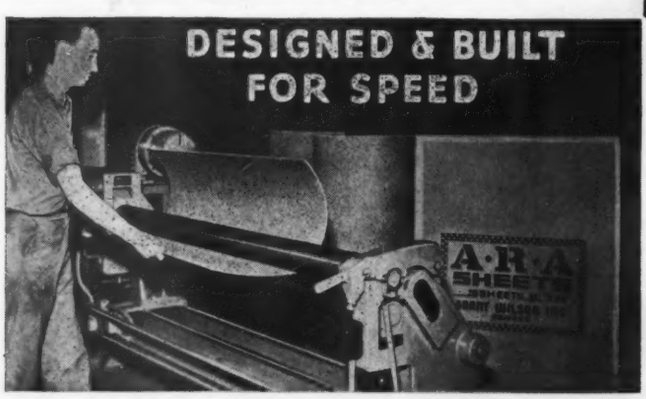
Every step in the development and manufacture of A.R.A. Sheets is a commercially scientific procedure, giving full control in the manufacturing steps to assure the best possible product for the greatest number of uses.

Thru the unique and ingenious construction of A.R.A. Sheets, you get not only a strong, substantial material to fabricate, but one with a very high thermal insulating value.

Recent tests made on A.R.A. Sheets at the Armour Research Foundation show it has an insulating value of K .45 Btu.

This remarkable construction also reduces sound travel and eliminates metallic noises.





Rolling A.R.A. Sheets is one of the marvels of the age. All you have to do is feed the sheets thru the same as you would a sheet of sheet steel.

You can roll the back of fittings to make bends or you can roll round pipe. Use standard metal or plastic seams or laps for the longitudinal joints and you can roll a piece of A.R.A. Sheet to form either an inside or outside sleeve for the butt joints.

Write today for our free 16-page illustrated booklet No. 89-A which describes the many outstanding features that are possible only in A.R.A. Sheets.

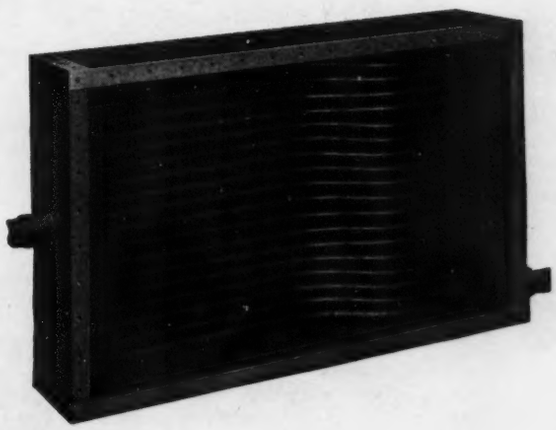
Get genuine A.R.A. Sheets from your jobber.

4101 WEST TAYLOR ST. **GRANT WILSON, INC.** CHICAGO ILLINOIS

AEROFIN

ALL STEEL FLEXITUBE and BOOSTER

STANDARDIZED HEATING SURFACE



CONSTRUCTION

● **TUBES**—heavy .049" wall thickness low carbon steel-seam welded tubes—offset to expand or contract under all temperature changes. Protected with a coating of solder over the exterior surface.

● **FINS**—are of low carbon steel spirally wound around the tubes in such a manner as to secure the maximum contact between prime and extended surfaces. Fins are protected with a coating of solder which also forms a *permanent metallic* bond between fin and tube. No falling off of transfer with usage due to loosening of the bond between fin and tube. Different spacing of the fins on the tubes makes available varying temperature ranges and thus permits accurate selections to meet the requirements of the engineer.

● **HEADERS**—of large diameter pipe insure adequate steam supply. All connections are male pipe thread.

● **TUBE JOINTS**—are made between tubes and headers by brazing.

● **ORIFICES**—in the inlet end of each tube insures equal distribution of steam through all tubes.

● **CASINGS**—are of heavy gauge steel and have the same standardized dimensions as copper Aerofin Flexitube coils.

● **TYPES OF SURFACE**—steel Flexitube heating coils are available in three fin spacings and in one or two rows of tubes in depth, allowing a wide range of selection to meet temperature rise requirements.

AEROFIN CORPORATION

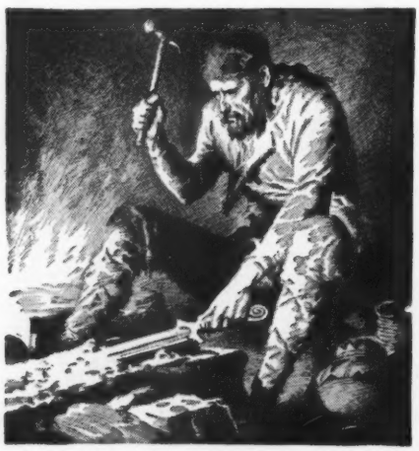
410 S. GEDDES ST., SYRACUSE, N. Y.

Chicago Detroit New York Philadelphia
Dallas Cleveland Toronto

History Repeats . . . The Bronze Age

Tremendous demand for copper and its alloys in making vital war materials bans use of the precious red metal for sheet metal work on residences and commercial buildings.

Haya, mate of Harth the Mighty, was annoyed when she awoke that morning some thousands of years ago. Crouched on his haunches at the mouth of the crude shelter, her spouse was industriously pounding the family utensils and ornaments into weapons. If he bothered to explain at all, Harth grunted that the tribe was at WAR . . .



. . . cooking pot into sword

that because copper was essential to win the fight, household use of the gleaming metal was out for the duration.

And this year of war, 1943, found many a U. S. housewife in a similar dither. She wanted brass fixtures for the bathroom, copper gutters, flashing and bronze screens. But America was at war — victory was dependent on copper alloys for the machines and munitions of war. For home building the vital metal was out — until men again laid down their arms.

Supply. . . and Demand

America produces a great part of the world's copper, also a large percentage of the world's brass, an alloy of copper and zinc. No. 1 fabricator in the field is The American Brass Company, operating 13 U. S. A. and Canadian plants.

As a result of research started over a century ago, and continuing today, the industry has developed a thousand uses for copper and its alloys. American life is safer, more comfortable, convenient and attractive because of copper's many familiar advantages: rust-immunity, corrosion-resistance, heat conductivity, easy fabrication.

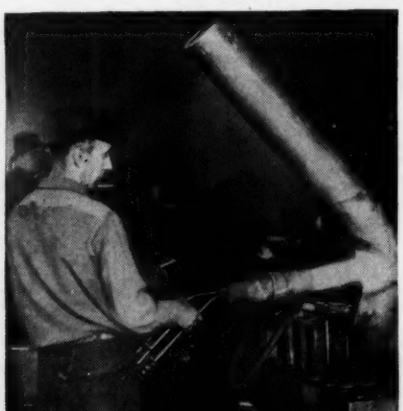
In peacetime, the output of copper is ample to supply the ever-increasing demands of industry and civilian needs. But war as it is fought today, requires the entire peacetime output, plus many millions of additional pounds.

Where it Goes

Hundreds of thousands of pounds of Anaconda Copper and Brass are turned out every day by American Brass Company workers for making shell cases alone. Imagine the amount needed for just calibre .50 machine gun cartridges, which may spew from the modern fighter plane at the rate of 3,500 per minute . . . and for the huge steel projectiles fired from heavy artillery and battleship guns, each of which requires a copper or copper alloy rotating band to give the projectile the spin that insures accuracy in flight.

Home Front

Sheet metal workers, despite present lack of copper, can look forward to increased use of this standby metal when peace comes. There'll be wider flashing applications in all types of construction. Among them, for example, will be termite shields, as well as the many sheet metal uses where the durability and workability of copper have made it such a favorite with the trade.



. . . the malleable metal

Wanted: Copper Scrap

As in the production of steel, scrap copper is important in the production of new metal. Mining capacity alone cannot meet the nation's expanded wartime needs. Scrap must make up the deficit. Inducement to those who think it isn't worthwhile to turn in the small quantity of scrap copper and brass they have on hand: relatively, a single pound of copper scrap is as important as 45 pounds of steel in prosecuting the war effort.

4801B

Published in the interest of a better informed war effort by

THE AMERICAN BRASS COMPANY ANACONDA

General Offices: Waterbury, Connecticut • *Subsidiary of Anaconda Copper Mining Company*

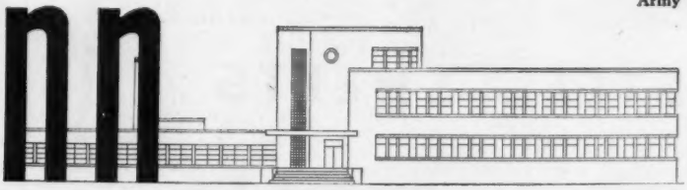
Every one of us at the Penn Electric Switch Co., is wearing the Army and Navy "E" today—and a beautiful new pennant floats with the Star Spangled Banner and the Minute Man flag above our plant.

For this recognition of our work in producing lighting and firing circuits for navy guns, periscopes for army tanks, and gun-firing solenoids for navy planes, we are grateful.

We see in this more than an award for past achievement. It is a challenge to continued and increased effort. To meet that challenge all of us have pledged our unremitting effort ...to support with our labors the men who fight our war... to keep the "E" flag flying... to dedicate our special skills and our production facilities to complete and final Victory.
Penn Electric Switch Co., Goshen, Indiana.

ARMY-NAVY "E" BADGE OF HONOR
is worn by all Penn employes, as a reminder of our pledge to surpass the record for which the Army and Navy "E" was given.

PENN



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

ONLY STEEL CAN DO SO MANY JOBS SO WELL

WHY do you suppose the wartime uses of steel must be so closely restricted, when the ingot capacity of American mills is over 90,000,000 tons a year? That's more than all the Axis nations together! The simple fact is—no other material can do so many difficult jobs so well, both on the fighting front and on the production front!

Steel's versatility has a very personal significance to every sheet metal worker. He has learned to rely on its strength, its lightness, its easy working qualities, and its heat resistance to help him produce a wide variety of durable metal structures. But war restrictions have forced many shops to resort to substitute materials for less essential jobs. They're "getting by" with these substitutes because the emergency demands it. But you can bet they're looking forward to the day when they can build with steel again.

If your sheet metal shop is busy with essential construction, the chances are your artisans are still working primarily with steel. Perhaps the new structures they are building have introduced unfamiliar fabricating problems. Remember, our fabricating knowledge is at your disposal any time you need it. We will gladly send you literature on the application of any of the U·S·S Steels listed below, or our engineers will answer your request for information personally.

If the job calls for sheet steel, you'll find the right material among these U·S·S STEELS:

U·S·S GALVANIZED STEEL for sheet metal structures requiring the added protection of a zinc coating.

U·S·S COPPER STEEL to give twice the atmospheric corrosion resistance of regular steel at little additional cost.

U·S·S PAINTBOND—A galvanized, Bonderized sheet that permits immediate painting and holds paint tighter. U·S·S Dul-Kote, a product with similar qualities, available in the South and West.

U·S·S HOT-ROLLED AND COLD-ROLLED STEEL to provide the basic advantages of steel, plus maximum economy in accordance with the needs of each individual job.

U·S·S STAINLESS AND HEAT-RESISTING STEELS to assure high resistance to corrosion and heat, and to reduce weight.

U·S·S VITRENAMEL — Sheets designed especially for porcelain enameling.

U·S·S STEEL SHEETS

CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*
COLUMBIA STEEL COMPANY, *San Francisco*
TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*

United States Steel Supply Company, Chicago, *Warehouse Distributors*
United States Steel Export Company, New York

UNITED STATES STEEL

Announcing a new and easier way to sell Dust-Stops*

Get this new <u>free</u> catalog. It lists the names of most forced warm air furnaces and tells the size and number of filters each requires.

• • •

AT LAST, a new and complete forced-warm-air furnace filter directory . . . a catalog which makes Fiberglas* Dust-Stop Air Filters easier to sell than ever before.

This catalog includes the names and model numbers of nearly every forced-warm-air furnace manufactured during the past several years. *And, it tells what size Dust-Stop each furnace requires.*

Now you can easily take orders for Dust-Stops by telephone. When a customer tells you his furnace name and model number, the catalog shows you the quantity and size Dust-Stops he needs. By pasting a price sheet on the back page, you can quickly refer to prices for the different sizes of Dust-Stops and immediately quote the customer on costs. Then, if you wish, you can handle orders C.O.D.

In addition to saving time in handling Dust-Stop inquiries and sales, this new catalog eliminates the necessity of making special trips to determine filter sizes. This means a saving of gas, tires, and time. So, be sure to get your copy right away by filling in and mailing the coupon below—NOW.

*T. M. REG. U. S. PAT. OFF.

FREE CATALOG!

FILL IN, CLIP, AND MAIL TODAY

Dept. 10

Owens-Corning Fiberglas Corporation
Toledo, Ohio

Please send me a copy of the New Catalog of Dust-Stop Air Filter Sizes for forced-warm-air furnaces and air-conditioning units.

*Name*_____

*Company*_____

Address

RIDIN' AND WORKIN' FOR UNCLE SAM

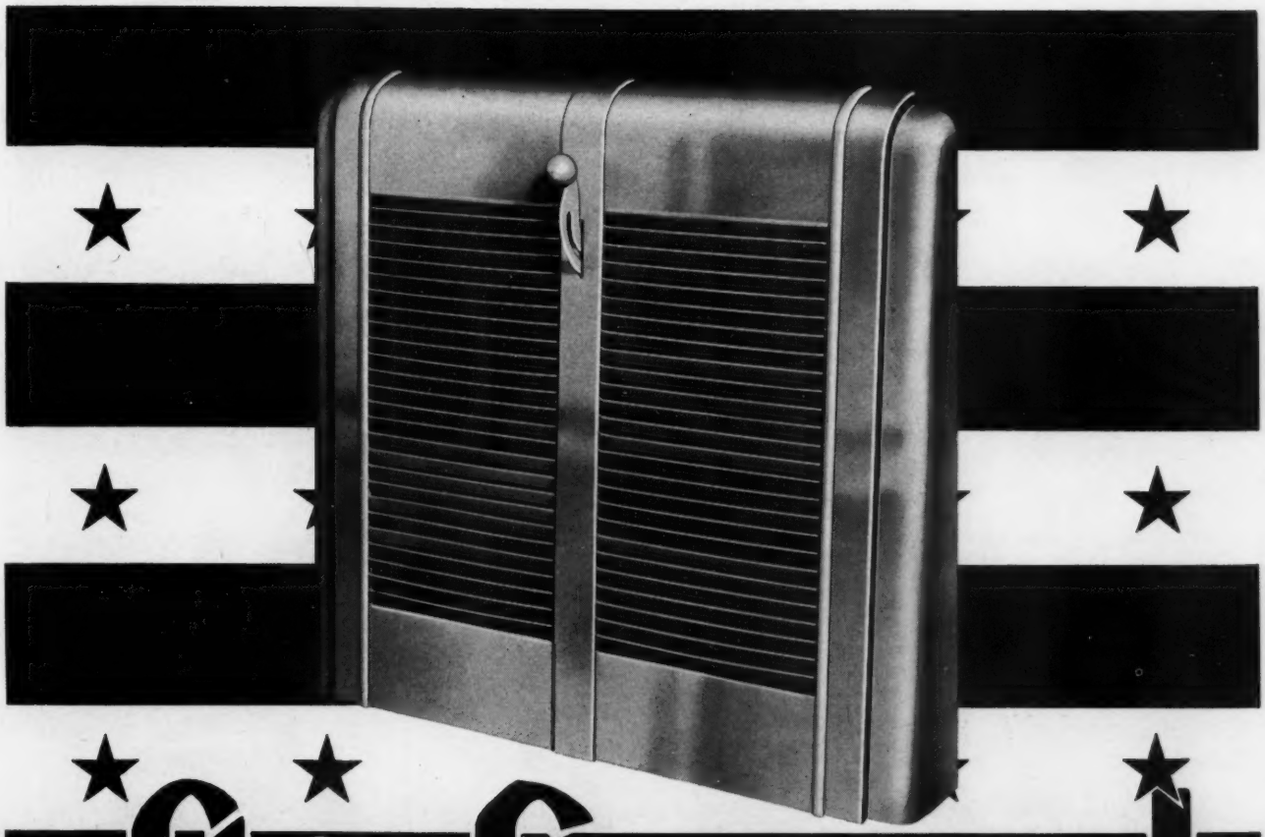
Mobile field ranges are the "dining cars" of Uncle Sam's modern army. To tired troops these steaming field ranges moving up to the front bring "chow" on the double quick—piping hot and plenty of it.

Galvanized iron is giving its "bit" to keep our men in fighting trim. Used for the exterior of army field ranges, it provides the same easy-working, durable qualities that have long made it popular with contractors for general sheet metal work. "Galvanized" also speeds Victory by releasing scarcer metals, formerly used in field ranges, for airplanes and other vital war equipment.

Close cooperation between Army and Navy technicians, designers and production men is stepping up the manufacture of all kinds of vital war material. ARMCO is aiding this effort in its research laboratories and mills —developing sheet metals with remarkable new properties and improving older sheets. You will have the benefit of all this after the war; with more opportunities for service and profit. The American Rolling Mill Co., 1091 Curtis St., Middletown, O.

THE AMERICAN ROLLING MILL COMPANY

GALVANIZED ★ ARMCO ★ INGOT IRON



Air Control Registers

USED IN THOUSANDS OF DEFENSE HOUSING PROJECTS

Air Control Registers — long a favorite with dealers throughout the country — are now equally popular for Defense Housing.

You will find Air Control Gravity Registers easy to install and readily adaptable for post-war conversion to Forced Air Registers.

Air Control offers a register for your every need. Stocks are available at our plant and at your nearest Air Control Jobber.

also ARMS for AMERICA'S FIGHTING FORCES

Air Control Products, Inc.

COOPERSVILLE • MICHIGAN

To help G-E Dealers this summer —and after the war

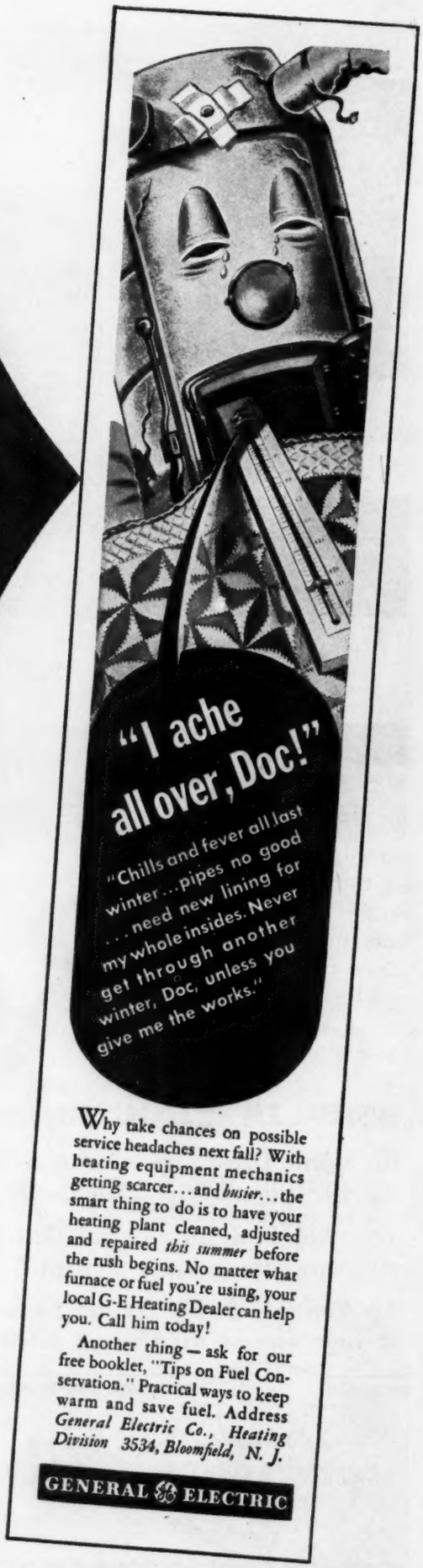
At the right, you see the second of several G-E advertisements urging home-owners to have their heating plants checked, cleaned, repaired this summer. This message will appear in June issues of *American Home* and *Better Homes and Gardens.*

It tells home-owners to call *G-E Dealers* for this service—no matter what fuel or what make furnace they use. This should help you in two ways:

1. To get *extra* service business during the slack summer months (instead of all at once next fall);
2. To put you in touch with good prospects for new G-E heating equipment after the war.

We believe that this is a practical way to help G-E Dealers meet war-time conditions. As soon as the present heating season ends, go out after servicing business. It's not too early to start lining up prospects right now! *General Electric Co., Heating Division 3534, Bloomfield, New Jersey.*

GENERAL ELECTRIC


"I ache all over, Doc!"
"Chills and fever all last winter...pipes no good ...need new lining for my whole insides. Never get through another winter, Doc, unless you give me the works."

Why take chances on possible service headaches next fall? With heating equipment mechanics getting scarcer...and *busier*...the smart thing to do is to have your heating plant cleaned, adjusted and repaired *this summer* before the rush begins. No matter what furnace or fuel you're using, your local G-E Heating Dealer can help you. Call him today!

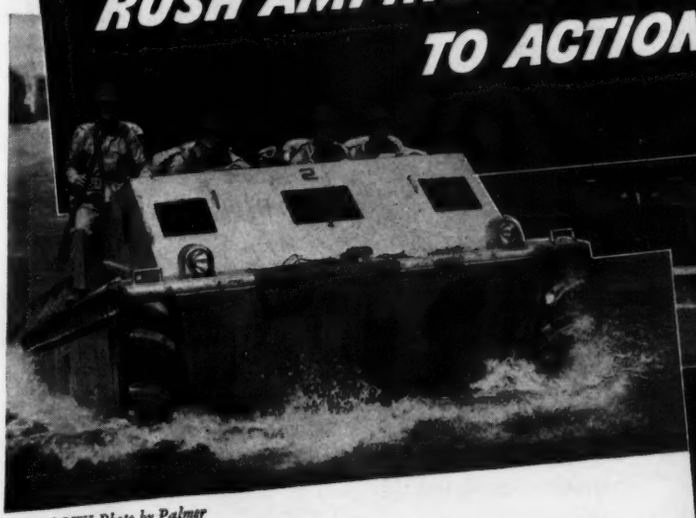
Another thing—ask for our free booklet, "Tips on Fuel Conservation." Practical ways to keep warm and save fuel. Address *General Electric Co., Heating Division 3534, Bloomfield, N. J.*

GENERAL ELECTRIC

AT FOOD MACHINERY CORP.

SKILSAW TOOLS

RUSH AMPHIBIAN TANKS TO ACTION!



Official OWI Photo by Palmer

Alligator Tanks they call 'em . . . and they're wanted *quick* for rough, tough action on America's fighting fronts. That's why Food Machinery Corp. depends on SKILSAW TOOLS to speed production. Like the tanks they're building, SKILSAW TOOLS are *fast, rugged, dependable* . . . they're action-tested front-line fighters in the Battle of Production!

You'll find these SKILSAW TOOLS *preferred* in war plants everywhere because they're lighter, more compact for easier handling . . . more powerful for greater output per man on countless jobs. Ask your distributor to demonstrate SKILSAW TOOLS on your own work *today!* See how greatly these better tools will increase *your* production!

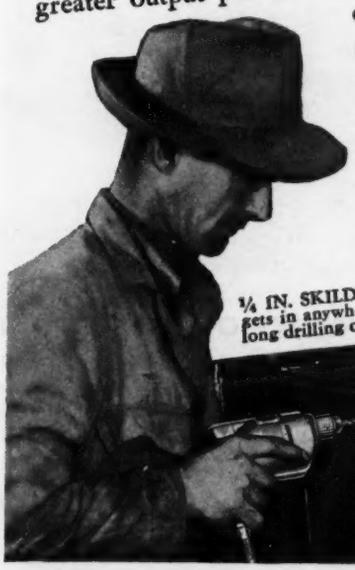
SKILSAW, INC., 5029 Elston Ave., Chicago
New York • Boston • Buffalo • Philadelphia • Cleveland
Detroit • Indianapolis • St. Louis • Kansas City • Atlanta
New Orleans • Dallas • Los Angeles • Oakland • Portland
Seattle • Toronto, Canada

¼ IN. SKILDRILL—Handles like pointing a finger . . . gets in anywhere a fist will. Powered for top-speed, day-long drilling on production lines.

EVERY MAN COUNTS FOR MORE USING SKILSAW TOOLS!

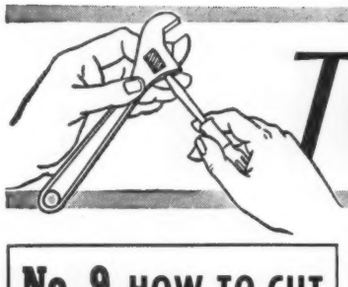
½ IN. SKILDRILL—Light, compact, powerful for faster, better drilling, boring and reaming in wood, steel, compositions.

SKILSAW SANDER-GRINDER—Speeds all grinding, filing, metal-cleaning, sanding, buffing and polishing on all materials.



SKILSAW PORTABLE ELECTRIC TOOLS

★ MAKE AMERICA'S HANDS MORE PRODUCTIVE ★



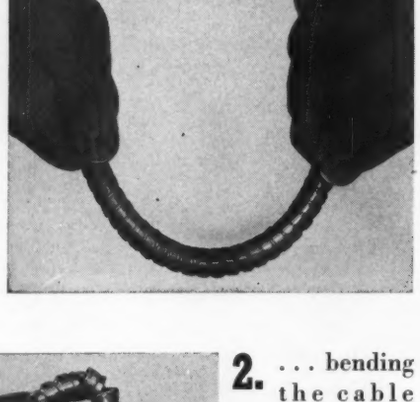
TOOL NOTES

"How To Do It" Information For Crescent Tool Users

No. 9 HOW TO CUT BX ARMORED CABLE

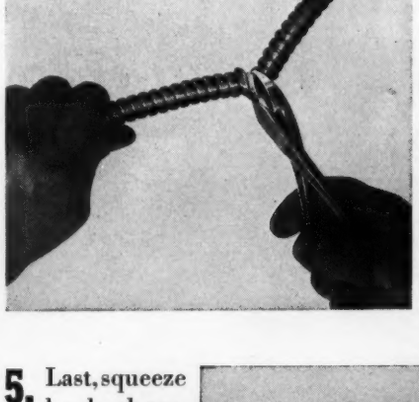
Here are two methods of cutting BX Armored Cable. Both assure a workmanlike result, and save time.

1. Grasp the cable with your hands as shown, either side of the point to be cut. Bend sharply until a spiral breaks open. Then reverse this procedure by . . .



2. . . . bending the cable sharply in the opposite direction. This operation will separate a single spiral of cable. Grasp the cable close to the break and . . .

3. . . . cut the exposed and separated spiral with a pair of Crescent No. 542 Heavy Diagonal Pliers, using care not to cut the insulated wire beneath.



4. Now cut thru the paper insulation and wires with your Crescent Heavy Diagonal Cutters as shown. Their powerful leverage will readily sever even heavy insulated wire.

5. Last, squeeze back sharp end of the armor with a pair of Crescent's No. 1950 Linemen's Pliers and you have completed a neat, workmanlike job.

THE HACKSAW METHOD

Instead of using a pair of heavy diagonals for the first three steps, a Crescent Hacksaw may be used. Clamp the cable in a vise, and saw across one spiral at the angle illustrated below, using care not to cut the insulated wire inside. Complete the job as explained in steps 4 and 5.

CRESCENT TOOLS
Give Wings to Work

REPRINTS OF THIS SERIES

. . . including the previous 8 informative advertisements are available without charge. State whether you want them for bulletin board use or to fit a standard 3-ring binder.

Write direct to:

CRESCENT TOOL COMPANY
JAMESTOWN, N. Y.

American ARTISAN

Vol. 112 No. 4

Summer Heating Plant Service

HEATING contractors in several sections of the country report that home owners, having muddled through the last heating season on their fuel oil allotment, are now selling themselves on the idea that last winter wasn't too bad and if they got by last winter they can do so next winter.

These oil users seem to have formed the opinion that the fuel oil situation will be "easier" next winter and that they do not have to convert or do much, if anything, to reduce their consumption of oil next season.

After canvassing the situation, it is the opinion of this publication that such an attitude is fraught with danger. Fuel oil supplies are not improving in heavy oil using areas. An additional war front will inevitably call for more oil. Transportation is not solved and can be much worse. Production, within feasible transportation areas, does not show any substantial improvement.

This adds up to an equally tight and perhaps a much tighter fuel oil problem next winter.

If the problem is as acute as we are told, OPA will unquestionably move heaven and earth this summer to get users to convert or to improve their houses and heating plants so that less oil will bring increased comfort.

The heating industry, at the same time, can contribute substantially to this fuel oil problem if every heating contractor will inaugurate a summer conversion or improvement program.

Such a program is directly in line with the problem of keeping busy this summer, because,

1—As reported in the National Warm Air Heating and Air Conditioning Association page in this issue, there is going to be available only a minimum requirement of new furnaces for replacement.

2—The labor situation, in many areas, will be bothersome so many contractors will have to select types of work they can do themselves or do with a minimum of mechanics.

3—Only in acute housing shortage areas will there be any appreciable volume of new house construction.

4—The material supply is easing, but restrictions on improvement are increasing, remodeling is being curtailed, so remodeling which has always contributed a large volume of work to our contractors may fall off further.

This all adds up, in brief, to the need for contractors to solicit work which they can do with a minimum of materials, equipment and labor. Putting heating plants in top condition is precisely such a program and need not be restricted to oil users but can include every home owner with a furnace or a boiler.

To conduct such a campaign the heating contractor should, first of all, know exactly what steps should be taken to check the operation of the oil burner, or stoker or hand-fired system. Then just what should be done to put the system in most efficient operation. This requires certain basic instruments which every heating man should have already—a CO_2 analyzer, a draft gauge, a high temperature thermometer, several thermometers for taking register and room temperatures, some type of anemometer and small hand tools.

Knowing how to check, and adjust a system, the next thing is finding the customers. The heating contractor's list of customers is a good beginning; to these names should be added all oil burner users, all stoker users, all owners of furnaces in the area the contractor can cover with the manpower available.

How to get the interest of the prospect for service can be solved by a series of personal letters, or by hand bills or other direct mail matter. Canvassing probably will be out of the question unless the contractor can get women and train them. A telephone solicitation probably will be easier to operate than a door-to-door canvass.

Contractors who have already launched such programs report that there is far more work of this type waiting than the industry can satisfy. It's small dollar orders, but the volume is unlimited. There should be no need for cut-price campaigns. The contractor is entitled to a substantial profit and there is enough of this work waiting so that the contractor can choose only the profitable orders.

Heating contractors who are determined to stay in business; who are willing to educate or refresh themselves in operating fundamentals; who will spend the effort required to get and do work can survive on this program and make money.

Interpretations, Amendments, Easements To Existing Orders

L-41 Revised

A REVISED definition of what constitutes maintenance and repair of a building is contained in an amendment to Conservation Order L-41, effective February 20. The new definition specifically designates that where a single job is partly maintenance and repair and partly new construction, the whole project will be considered new construction and subject to Order L-41.

In addition, the amendment reduces to $200 new construction which may be undertaken, without specific authority, by a number of manufacturing enterprises which are not essential to the war program. Moreover, the amendment applies to private dwellings and commercial structures.

Under the new definition, maintenance and repair means the work that is necessary to keep a structure in sound condition, but does not include any building operation involving a structural alteration or change in design.

In specifying industrial structures whose exemption under L-41 is reduced to $200, the amendment embraces all structures which have as their principal function the manufacture, processing, or assembling of any of the following: athletic supplies, sporting goods, toys or games; beverages (except milk); books, magazines, newspapers, greeting cards or other printed or engraved matter; candy or chewing gum; jewelry, watches, traveling bags, brushes, razors, pipes and like articles for personal use or adornment; furniture, silverware, china, household electrical appliances, draperies, and all similar articles; musical instruments; stationery or office supplies; toiletries or cosmetic products, and all sorts of wearing apparel, except that for the Army or Navy. Any industrial construction with a productive floor area of less than 10,000 square feet is also included. The amount of exemptions previously allowed these structures varied.

The order, as amended, provides that no construction may be begun or carried on unless it is specifically authorized by the War Production Board or unless the estimated cost of the project is limited to stated

(*Continued on next page*)

Notice—MPR 251 Will Be Revoked

MOST parts of the huge construction industry not already exempt from price control soon will be removed from regulation, Price Administrator Prentiss M. Brown announced March 22. However, *repair and maintenance services which are a factor in civilian rents will remain under control.*

All general contracting activity and many types of sub-contracting for jobs on new dwellings and factories, as well as many of the services connected with the construction of a new building, will be formally excluded from price regulation.

The Administrator stated that the removal from price control would be accomplished through revocation of Maximum Price Regulation No. 251 (Construction Services and Sales of Building and Industrial Equipment and Materials on an Installed or Erected Basis).

However, certain construction activities which are factors in the preservation of rent ceilings will remain under control of other price measures.

The Administrator pointed out that most of the industry is now active in military construction and other government building activities which previously have been exempted from regulation. The remaining construction activities, which were subject to OPA control, will be exempted, except in cases where transfer to other regulations will be announced.

Examples of construction work which will remain under control are as follows:

1. Repair services, including plumbing and the repair and maintenance of heating plants.
2. Sheet metal work.
3. The sale of goods—such as roofing, flooring and siding—on an installed basis when such materials are necessary for the maintenance of existing structures.
4. The sale of building materials on an installed basis where the items are sold on a unit basis. Materials such as water-heaters and furnaces, when sold on an installed unit basis, will remain under control.

The prices for materials purchased by the industry will also remain subject to applicable price regulations and wages paid, subject to applicable wage controls of the National War Labor Board and the Wage Adjustment Board.

Maximum Price Regulation No. 251 will be revoked as soon as appropriate amendments to other regulations have been approved so that the specific types of sales and services for repair and maintenance of buildings may remain under control.

At the same time the Administrator announced that since the regulation is to be revoked, there is no longer any necessity for filing reports required under it. Amendment No. 1 to the regulation was issued March 22 revoking the reporting provisions.

Except for the reporting provision, all contractors are expected to comply with the regulation until it is revoked and until it is known which sales and services will become subject to other regulations.

A list of several hundred specialized lines of contracting and installed sales is being compiled by OPA now to assist sellers to determine whether the materials or the services they sell are on an installed basis. The list will be available to the trade and copies will be sent to all OPA regional offices to meet requests from trade associations and contractors.

amounts. These amounts limit construction to $200 for residential and some specifically mentioned types; $1,000 for multiple residential; $1,000 for agricultural; $5,000 for industrial; and $1,000 for "other restricted" construction not otherwise classified.

Agricultural construction was exempted from the Order, where the construction is necessary to the installation of material or equipment, the distribution of which is controlled by certain other orders. This exemption is ordered to remove a second unnecessary control on farmers by Order L-41.

Where a structure has been damaged or destroyed by disaster, the order now expressly exempts such construction work as is necessary to protect or make safe the building or its contents. This permits putting on a roof or other similar work necessary to protect the property, its contents or the public.

An additional exemption is allowed for construction which is necessary to restore or replace residential or multiple residential structures damaged or destroyed by disaster, provided that the estimated cost is less than $5,000. In these cases, Form PD-200 must be filed within two weeks after the damage or destruction occurs.

◆

Repricing Services

Office of Price Administration.
Gentlemen:

In Supplementary Order 38, services which formerly were free are now permitted on a dollars and cents basis.

In the warm air heating industry, contractors have frequently offered free of charge a furnace inspection which tells the owner the condition of the furnace. The contractor, of course, hopes to sell a cleaning or repair order.

It is also customary in this industry to offer free of charge small services, such as painting the front of the furnace, or oiling the motor and blower, when the home owner buys a cleaning service.

According to Supplementary Order 38, these services, formerly offered free, can now be charged for. Is this correct?

Yours very truly,
AMERICAN ARTISAN.

American Artisan.
Gentlemen:

Reference is made to your letter of March 11, 1943, in which information is requested relative to the provisions of Supplementary Order No. 38.

You state that in the warm air heating industry contractors have frequently offered free of charge certain services including furnace inspection, painting the front of the furnace, and oiling the motor and the blower, to the home owner in connection with the contractor's effort to sell the home owner a cleaning or repair order or cleaning services.

You desire to know whether in view of the provisions of Supplementary Order No. 38 the contractor may now charge for these services.

Your attention is directed to the fact that Supplementary Order No. 38 has been amended. In view of the amendment the provisions of the Order are not applicable to a seller at retail nor does the Order cover those services which during March, 1942, were rendered without charge.

Since the situation cited the services are given to a home owner, the contractors are sellers at retail within the definition contained in the Supplementary Order and since the services were given free during March, 1942, the provisions of the Order are not applicable in the particular instance cited by you and the contractors will not be permitted to make a charge for such services.

Sincerely yours,
WARREN L. SHARFMAN,
Chief Counsel, Building Materials Branch.

The order reads:

Supplementary Order No. 38, As Amended Accommodation Sales of Service

Section 1305.51 is hereby amended to read as set forth below:

Section 1305.51. Accommodation sales of service. (a) Any seller of services, other than a seller at retail, who in March, 1942, had a fixed practice of making accommodation sales of service is hereby authorized to charge, and any person, other than a purchaser at retail, is hereby authorized to pay rates, charges, fees and compensation at an amount not exceeding the aggregate of the cost of direct labor at legally permitted wage rates and materials at actual cost to the seller or at the ceiling price thereof, whichever is lower, for the service sold or supplied.

(b) As used in this Supplementary Order, "accommodation sales of service" means a sale made, other than at retail, for the convenience or benefit of the purchaser at the aggregate of the cost of direct labor at legally permitted wage rates and materials at actual cost to the seller or at the ceiling price thereof, whichever is lower. It does not include a service rendered without charge, or for less than such costs, or in connection with the sale of any other service or commodity other than an accommodation sale. It does not include sales by cooperatives, non-profit or other organizations, which make sales initially above cost, but later give refunds, bonuses, dividends or other allowances to purchasers.

(c) As used in this Supplementary Order, "seller at retail" means one who sells to an ultimate consumer other than an industrial or commercial user. Sales to farmers shall be considered sales at retail.

◆

Amendment 10, MPR 188

ANY person *making the first sale* of an article of specified building materials and consumer goods covered by Maximum Price Regulation No. 188 is considered the "manufacturer" under that regulation, the Office of Price Administration has ruled.

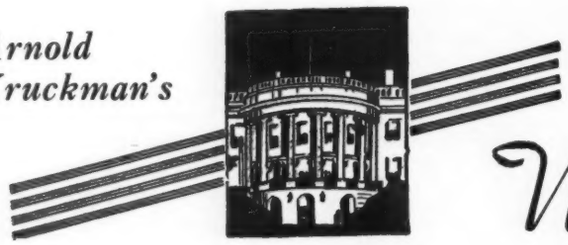
This redefinition of the term "manufacturer" makes the regulation known as Manufacturers' Maximum Prices for Specified Building Materials and Consumers' Goods other than Apparel applicable to all the manufacturing operation it was designed to cover and take care of certain conditions under which a technical exemption from this regulation has resulted.

Under Amendment No. 10, effective April 5, 1943, "manufacturer" means the person *who makes the first sale* of an article listed in Appendix A of this regulation after the article has been completed to the point indicated by the terminology of the appendix.

Under the old definition, "manufacturer" meant a person operating an establishment which produces, fabricates, finishes or assembles a building material of consumers' goods.

(*Continued on page* 67)

Arnold Kruckman's



Washington Letter

Nugent's-Pay Now For Post War Delivery

OUT of the welter of post-war plans one of the very few that seems to appeal to the realism of business men has been Rolf Nugent's proposal to operate installment buying in reverse. Mr. Nugent simply adopted the time-payment idea and turned it around. His plan asks the consumer to lay away a certain amount of money during the war period which will pay for something he wants after the war. It is in essence the installment buying idea adapted to the lay-away technique which retail shops successfully apply during the holidays. In this case the consumer lays his money away with the United States Treasury and receives a certificate which is his paid up evidence of a prior claim on a furnace, a refrigerator plant, an automobile, or whatever he desires to acquire after the war.

The plan is still a potential. It is not in operation. The chief reason it has not been placed in operation is because the Treasury people are opposed to it. They think it will interfere with their efforts to sell War Bonds. They do not deny that the Nugent plan in effect creates another short time loan reservoir, but apparently they feel that it is poor psychology to divert funds piled up in bonds purely out of patriotic impulses for bonds piled up in the Treasury to be paid to the smaller and larger business men of the nation for the merchandise and services they supply after the war. Treasury is a powerful influence in Washington thought, therefore, this Treasury opposition has blocked the Nugent plan. For this reason alone it seems rather doubtful if the Nugent plan will be made effective. In addition, there is a strong opposition from auto dealers. While the automobile manufacturers are practically neutral on the subject, the dealers are vigorously opposed because they fear the Nugent plan means that after the war the business community of the nation would be put under strict regimentation. They point out very frankly they expect the post-war period will be the time of golden harvest for auto dealers if free enterprise is permitted full play.

Who's Nugent

We often understand an idea more clearly if you get an impression of its sponsor. Nugent seems to be about forty. He has an exceedingly pleasant and reasonable personality. He is the expert in charge of the Consumers' Credit Study in OPA. He graduated from Amherst in 1923 and became a Bell Telephone traffic engineer in 1924. Then he went into the service of the State of Pennsylvania and from 1926 to 1933 he was Assistant Director of the Department of Remedial Loans in the Russell Sage Foundation. In 1933 he became a consultant in the NRA, and in 1940 they absorbed him in the Defense organization that formed here. He has the background of an academic New Dealer, and he has the smooth facility of a schoolman in conversation, but he is by no means a collectivist or an adherent of the doctrine of a permanently controlled economy. He believes in free enterprise. And that naturally means he believes in the preservation of smaller business and in maintenance of our present form of Government.

Nugent frankly will tell you he does not think we can avoid some form of control when this war is over. He feels that there will be chaos in Asia and chaos in Europe, and that we will be compelled to submit to some form of disciplined control during the period of adjustment. It is during this period the installment selling in reverse is expected to help to take up the slack that otherwise might bring chaos to America. How long the period will last it is difficult to determine from Washington opinion. Some think two and three years; some think a year. And it is only fair to set down that some think it will be a permanent condition.

The degree to which the control may be exercised, if it is permanent, is highly debatable here. Some of our New Deal friends hold that a rigid system of control will be good for our souls and helpful to the people in other parts of the world who need a share of what we have. Men like Nugent feel that a plan like his installment-in-reverse-buying will quickly taper off and that free enterprise will rapidly take its place.

Does OPA Like the Scheme?

No one yet knows how Prentiss Brown, the new head of OPA, feels about the Nugent plan. He has not been able to go into its details. We do know, however, that Brown sincerely feels OPA should trim its sails to any wind that is popular with the people. For instance, he feels the term "rationing" is in disgrace and that we should find a new word or phrase. He and Lou Maxon, the Michigan advertising wizard, are seeking some word that will suggest voluntary sharing. The current OPA trend is to do the thing that is approved by James Byrnes, the Stabilization Director, and the thing that is popular with the people. If Byrnes can be brought to approve the Nugent plan and the business people like it, we are apt to find ourselves urged to buy certificates to acquire merchandise after the war.

The plan will work something like this. You will invest your money in a certificate issued by the Treasury. You buy a certificate which gives you a prior

right to obtain a furnace, to be delivered after the war. In theory, you buy a certificate for a gas furnace or an oil furnace or a coal furnace. Or you simply buy a certificate which entitles you to a furnace. Bear in mind, you do *not* buy a specific kind or brand of furnace. You simply buy a furnace, possibly limited as to the kind of fuel that may be burned in the furnace. You distinctly do not buy a furnace from a 1942 or 1943 catalog. You buy the kind of furnace that may be available *after the war*. Nugent, incidentally, thinks in terms of a war that may be over in two or three years or even longer. And he seems confident it will take from 18 months to three years to reach some sort of post-war equilibrium.

It is conceivable a furnace may cost substantially more after the war; labor may be more expensive, materials may cost more, transportation may be more costly, distribution may involve more expenditure. Or it may be necessary to make furnaces differently by reason of changes in construction trends or scarcity of materials. Any number of things may happen that may utterly change present standards and bases. The Nugent plan meets these possibilities simply by providing that the certificate is surrendered for its face value and you pay any balance in cash. So long as you remember the certificate does not represent simply one kind of furnace, but any furnace of any type and kind, you can readily grasp that the purchaser has wide latitude in securing his furnace when the time comes.

You Don't Buy Any Product

The purchaser does not commit himself to buy a furnace or installation service from one particular firm. He commits himself to buy a furnace, and he may commit himself to buy a furnace and installation of a definitely advertised brand or type. This will enable the manufacturers and the contractors to anticipate a market for a certain quantity of furnaces and for a certain number of installation jobs in connection with these furnaces.

If the purchaser wishes to change his mind and determines to install an oil furnace in place of a gas furnace, he can always make the necessary arrangements. He sacrifices his priority that goes with his original choice and he must take his place in the sequence that may exist when he shifts. To make the change he must register and pay, say, a dollar as a registration fee.

The purchaser of the certificate is not even bound to buy a furnace. If he is willing to sacrifice his priority and if he is willing to pay whatever the difference in price may be in cash, he may apply his certificate to the purchase of an automobile or a refrigerator or any other article that is scheduled within the scope of the plan. He may even apply the face value of his certificate to buying a vacation tour.

You see, when you invest in one of these post-undated installment buying certificates, you buy a valid claim for *something*. You must cash your certificate in goods, not in funds. You are committed to buy something of value, to take a supply of something. You buy a claim to a furnace or a car or a refrigerator. Your certificate is in effect a short-term Treasury note, to be cashed by delivery of the article specified or its equivalent.

The Army says it likes the idea because it may siphon off the excess funds in possession of the troops which now go for things in foreign countries with no value to the soldiers, and bringing little satisfaction to the people of the countries in whose boundaries the soldiers do their restless buying.

The psychologists and sociologists in the Government hail the idea because they say the workers in this country now piling up surpluses get few "satisfactions" out of their earnings. They feel the present situation may lead to intangible disturbances that may react upon the productive machinery for war. They feel that something like the Nugent plan will provide the "satisfactions" that come with the consciousness of acquiring something of value as the result of the growing individual prosperity. Apparently the sociologists regard the buying of furnaces for future use as morale building and as a safety valve for workers with more money than they know what to do with who are exacerbated by a sense of frustration.

Some Industries Ready to Start

Various industries are eager to get started with the Nugent plan. Some have already initiated several modified versions of the plan. One group of industries has had in training young girls who are prepared to go on the road, particularly in the rural districts, with horse and buggy, to canvass the farms and country towns to sell the Treasury certificates. Others have formulated their private versions of the plan and have sent people on the road selling some sort of promise-to-pay contract, redeemable in goods after the war.

It is reported manufacturers of kitchen equipment and similar goods have had several conferences for the purpose of developing coordinated and cooperative plans, the chief purpose of which would be to send saleswomen into the country to sell certificates based on installment deposits and redeemable in the goods made by the group after the war. The discounts are reported to supply an attractive inducement to prospective buyers. The contracts and the deposits are reported to be guaranteed by some banks and by certain insurance companies. The program naturally is analogous to some of the banking-insurance thrift plans. Obviously, this variation of the Nugent plan is entirely a private enterprise and an adventure with which neither Mr. Nugent or the Government have any connection.

Some Parallel Legislation

Meanwhile, the Senate Smaller Business Committee and the Senate Banking and Currency Committee have been conducting hearings in order to explore other channels for the benefit of civilian industry. In the Senate, S-885, and in the House, HR-2320, provide for the creation of a Civilian Supply Administration. The Senate Bill was introduced by Senator Francis Maloney, Connecticut, together with Senator James G. Scrugham, Nevada, and Senator Robert A. Taft, Ohio. They acted as a subcommittee of the Murray Smaller Business Committee. In the House the Bill was introduced by Rep. William B. Barry, New York, member of the Patman Small Business Committee. The Bills constantly reiterate it is necessary to establish the Civilian Supply Administration "to keep the civilian population healthy and functioning effectively." This phrase is repeated so often that it gives you the impression the people of the nation apparently are regarded as something apart and separate from the group that sponsors the Bills.

It is to be the Civilian Supply Administrator's job, at

(*Continued on page* 73)

An Introduction to the

New PD-1A Application Form

AS ANNOUNCED in AMERICAN ARTISAN a new PD-1A form is to be used from now on if contractors' local WPB offices have a supply. In case the new forms are not available locally, old Form PD-1A can be used until April 15, but WPB announces that the old form will not be considered after April 15.

This new PD-1A is to be filed with local WPB offices for processing. The new PD-1A is made out in triplicate—the original and one duplicate goes to the local WPB office. The third copy is kept by the contractor for reference.

There are some changes in the general make-up of this form.

Item I with the name, address, etc., is self-explanatory. The box at the right hand of Section I is for the WPB office and is to be disregarded by the contractor.

On Item II it is emphasized that each PD-1A should be filled in for only one product and for only one purpose. If one product is to be used for the same purpose on several jobs, however, one PD-1A can be used to cover the one product on all the jobs. However, if there is more than one product required on one job, a separate PD-1A must be filled in for each product or for each purpose.

Section 3 is self-explanatory.

Section 4 should be filled in as briefly as possible. For instance, "furnace installed" or "sheet metal contractor" are sufficient identification.

Section 5 asks for a description of the material or equipment and specifies that trade names shall not be used, but an approximate composition of alloys should be used. It is conceivable that this may be a difficult question, as for instance, if the contractor wishes to use Armco Ingot iron and can not use the name Armco, he must describe the galvanized iron sheet. Or, if the contractor wishes to use Roofloy, he can not use the trade name but must describe this as a lead-alloy light gauge sheet. For the purpose of assisting contractors in filling in section 5, we include with this article a brief summary of various trade name materials commonly used.

Section 6 should be filled in, including either the address of the contractor if materials are to be delivered to the shop or the address of the project if the materials are to be delivered to the job.

Item 7 is a checking section and therein this Section 7 is self-explanatory, except the box for "other specified" where there is not much space given so it is suggested that if the contractor must check this box, he attach a letter describing just how the material or

Form PD-1A (1-16-43)

UNITED STATES OF AMERICA
WAR PRODUCTION BOARD

APPLICATION FOR PREFERENCE RATING

BUREAU OF THE BUDGET No. 12-R569.42 APPROVAL EXPIRES SEPT. 21, 1943

DO NOT WRITE IN THIS SPACE

WPB Case No.

TO: War Production Board, *Washington, D. C.*
ATTN: PD-1A

FOR INSTRUCTIONS.—*See page 4 of Original and Triplicate.*

Division Code | Date In | Date Out

Routine

(Name of Applicant)

(Number and Street)

(City and State)

Telephone No. of Applicant: | Date:

Foreign Clearance No.

2. Name the specific final product to be manufactured or produced (or service to be rendered) by the applicant with the item(s) requested on this application.

3. Enter reference number if you wish correspondence about this case to be so identified.

4. Nature of applicant's business (such as mining, manufacturing, laundry, etc.).

5. Describe material or equipment on which a rating is requested in nontechnical terms. (Do not use trade name. Give approximate composition of alloys.)

6. Where is item(s) requested to be delivered? (If for export, give country of destination.)

7. How will item(s) requested be used? (Check which)

☐ Incorporated in product ☐ Maintenance or repair
☐ Export ☐ Immediate use
☐ Capital equipment ☐ Reserve stock
☐ Operating supplies ☐ Other (Specify)

8. Is this a resubmission of a previous application for this item which was granted ☐ denied ☐

If so, give:
Date Filed
WPB Case No.
Attach original certificate or copy of denied application.

9. Item(s) will be secured from (Check one)

☐ Manufacturer ☐ Retailer
☐ Wholesale Distributor ☐ Other (Specify)
☐ Own Stock

10. Probable supplier

Name: | Address (Street, City, State)

11. If rating is requested to release material restricted by an L or M order, give:

Order Number

L— | M—

12. How will product manufactured, or service rendered, help the war effort or essential civilian needs? (List up to 5 major contracts affected, where possible.)

Form PD-1A—(1-16-43)

13. List for the division or plant in which item will be used, the total dollar value of business by rating groups specified. Give actual orders scheduled for production during the next three calendar months, if possible. But if you are engaged in a "service" industry (such as hotels, cleaners, etc.) you may give for the last three calendar months dollar volume of sales or billings.

Rating	Use One Column Only: Orders Scheduled for Delivery (Dollars)	Use One Column Only: Past Sales or Billings (Dollars)	Percent
AA-2X and higher			
AA-3 thru AA-5			
A-1-A thru A-1-K			
All other (rated and unrated)			
Total			

14. List "P" orders under which this division or plant operates.

Order No.	Symbol	Rating
P-		
P-		
P-		
P-		
PRP(PD-25A)		

If PD-25A Filed but Certificate Not Received, Give Date Filed:

15. If item(s) for which rating is requested is Capital Equipment or will be used to Repair capital equipment, give following information.

(a) Explain use or relationship of item(s) requested to product manufactured or to service rendered, as stated in Item 2 above.

(b) Will the item(s) applied for be used
☐ To expand
☐ To repair
☐ To replace present facilities

(c) Do you now have any equipment of same type as that for which rating is requested in this application?
(1) ☐ Yes. (2) ☐ No.

Make and ... Designation of Applicable | Age
Condition
Number of Units | Total Capacity (All Units)
Explain Why Additional Equipment Is Needed
Explain How You Now Do the Work for Which You Request the Equipment Applied For

(d) If item(s) will replace present equipment, what disposition will be made of replaced equipment?

(e) Give present number of employees in plant ☐ or office ☐ in which this equipment will be used.

First Shift | Second Shift | Third Shift

(f) What will be the average weekly use of requested equipment in hours?

Estimated life of this type of equipment with such use:

TRADE NAME	NAME OF MANUFACTURER	USE on PD1-A Mfr's Metallurgical Designation
Anaconda	American Brass Company	Copper, brass, bronze and nickel silver alloys
Apolloy	Apollo Steel Company	Copper bearing steel
Armco Ingot Iron	American Rolling Mill Co.	"Pure" iron, not over .02% carbon; .035% manganese
Armco Paintgrip	American Rolling Mill Co.	Bonderized, galvanized, "pure" iron
Armco Zincgrip	American Rolling Mill Co.	"Pure" iron special galvanizing
Beth-Cu-Loy	Bethlehem Steel Company	Rust-resisting steel containing 0.20 to 0.30% copper
Bunker-Hill	Northwest Lead Company	Chemical grade soft sheet lead
Checkercoat	Superior Sheet Steel Company	Galvanized steel sheet—controlled spangle
Copperior	Superior Sheet Steel Company	Steel base sheet; copper content (.20 to .30)
Cop-R-Loy	Wheeling Steel Corporation	Low carbon steel with copper added
DovRloy	Reeves Steel & Mfg. Co.	Zinc coated steel base sheet with gray etched surface
Duronze	Bridgeport Brass Co.	Silicon bronze or silicon copper alloys
Enduro	Republic Steel Corporation	Chromium or chromium-nickel stainless steel
Everdur	American Brass Company	Copper-silicon alloys
Ex-L-ite	Republic Steel Corporation	Cold reduced tin plate
Falco	Fairmont Aluminum Company	Aluminum sheet and strip
Ludlite	Allegheny Ludlum Steel Corporation	Non-metallic board faced with thin stainless steel
Lyonore Metal	Lyon, Conklin & Co., Inc.	Chromium-nickel-copper iron base sheet
Mayari R	Bethlehem Steel Company	Low alloy, high strength steel
Monel	International Nickel Company, Inc.	Alloy of ⅔ nickel and ⅓ copper
Nickeloid	American Nickeloid Company	Electro-nickel plated sheet
Olympic Bronze	Chase Brass & Copper Co.	Type A copper-silicon alloy
Pluramelt	Allegheny Ludlum Steel Corporation	Face of stainless steel on one or both sides of a mild steel base metal
Super-X	Western Cartridge Company	(1) Phosphor bronze alloys; (2) Nickel silver alloys
Toncan Iron	Republic Steel Company	Copper-molybdenum alloy iron
U-Loy	Republic Steel Corporation	Copper-bearing steel
USS A-R Steel	United States Steel Corporation	1.75 per cent manganese steel (abrasion resisting)
USS Copper Steel	United States Steel Corporation	Steel with approximately .25 per cent copper
USS Cor-Ten	United States Steel Corporation	1.00 per cent chromium, .50 per cent copper steel
USS Ferro-Stan	United States Steel Corporation	Electrolytic tin coated steel
USS Galvannealed	United States Steel Corporation	Steel sheet galvanized and heat treated for forming and paint adherence
USS Man-Ten	United States Steel Corporation	1.50 per cent manganese steel
USS Paintbond	United States Steel Corporation	Steel galvanized and chemically treated for paint adherence
USS Vitrenamel	United States Steel Corporation	Low metalloid steel for vitreous enameling purposes
Wilder Metal	Wilder Manufacturing Company	Steel sheet special coating mostly zinc
Zincoat	Tennessee Coal, Iron and Railroad Co.	Mild steel base sheet with special galvanized coating for painting without treatment

item will be used. This letter should be made out in triplicate, with the original and duplicate attached to PD-1A and the triplicate attached to the triplicate PD-1A, which the contractor retains.

Item 8 is to be used in case the application is a duplicate of an application previously made, but rejected. WPB cautions that where an application has been rejected and a new PD-1A is filed, the contractor should be very cautious to make sure that he has new proof of the need for filing the second application.

Section 8 is not intended to be used where the contractor has extended a rating to a jobber or manufacturer and the order has been turned down because the contractor's priority rating is too low. The thing to do in such a case is to place orders with other jobbers or manufacturers. If all possible sources of supply have been exhausted and proof is attached to the PD-1A to prove that all possible sources have been canvassed, then the contractor may submit a new PD-1A application.

Item 9 is self-explanatory and so is Section 10, which should be filled in if the contractor knows where he is going to place the order.

WPB emphasizes that Section 11 is very important. For example, if a fan on a ventilating system has been damaged so that a complete replacement is necessary, but Order M-126 prohibits the purchase of a fan, then the Order M-126 should be placed in Section 11 to indicate how high a rating is required for the contractor to obtain a fan over Order M-126.

Section 12, if properly used, may seem to the contractor to be an excellent place to "talk a case" for himself by claiming that the material or product will be used to further the war effort. WPB points out that a lot of words will not make a case, but, instead, the contractor should be very brief and, above all, truthful in filling in Section 12, because WPB will discount heavily anything which looks as though it is "padded out."

It is our understanding that Section 13 is to be used only where the material applied for is incorporated in products which are manufactured on a production schedule. In other words, application for sheets or products to be incorporated in a housing project would not be shown in Section 13. On the other hand, sheets for ammunition boxes which are in steady production would be shown in Section 13 by priority rating and dollar volume.

Section 14 is to be used where materials, for example, required to repair a furnace ordinarily would be obtained with an A-10 rating under P-84, but the A-10

(*Continued on page* 74)

HISTORY OF THE NATIONAL WARM AIR HEATING and AIR CONDITIONING ASSOCIATION

By... ALLEN W. WILLIAMS

CHAPTER 1

The Association's Formation – 1914

Through the coming months this history of the industry's association will appear serially in AMERICAN ARTISAN, covering the period from its formation in 1914 to the present day. Its eventual publication in book form may result. Thus, a record of the activities and accomplishments of the association which, in turn, is a picture of the industry's development will be preserved. This first installment gets us started with the pre-organization meeting in 1914, at which the association was officially formed, and presents the "Objects and Aims" set up at that time. Next month the association gets into action.

January 22, 1914, will always be remembered as a most significant day and year to the warm-air furnace industry. It marked the formation of what was first known as the National Heating and Ventilating Association, and later successively as the National Warm Air Heating and Ventilating Association, the National Warm Air Heating Association, and now the National Warm Air Heating and Air Conditioning Association, these different names being indicative of changes which occurred from time to time in the industry and its products.

The meeting at which the Association was formed was held at the urgent suggestion of certain progressive furnace dealers who were members of the Warm Air Furnace Committee of the National Sheet Metal Contractors Association, John H. Hussie of Omaha being Chairman of the Committee.

Too much credit cannot be given the fifty leading manufacturers of warm-air furnaces or their appurtenances, who in response to a general invitation sent to all manufacturers in the industry, gathered in the Statler Hotel, Cleveland, on January 22, 1914, to consider establishing a national organization. Credit is also due the twenty-eight manufacturers who, unable to attend, wired or wrote that they favored the formation of the proposed association.

All present appreciated a very serious need existed for the proposed cooperation and agreed that a strong national association, ready to meet any emergency and take advantage of every opportunity as it appeared, should be formed immediately.

Subsequent events and conditions have proved that their action was none too soon and that they were planning even better than they knew, for they never dreamed of the wonderful developments which were in store for their industry and its products, nor how necessary and valuable a contribution to the health, safety and comfort of the American people the activities they were about to establish were destined to make for years to come.

The following interesting excerpt is from the minutes of that now famous meeting of January 22, 1914:

"The meeting was called to order at 10:30 A. M. by John H. Hussie, Chairman of the Warm Air Furnace Committee of the National Association of Sheet Metal Contractors.

"Mr. Hussie explained that the meeting was called to secure if possible the organization of a national association of manufacturers of warm-air furnaces and furnace heating appurtenances that would work to increase the volume and improve the quality of heating with warm air throughout the United States and Canada.

"Mr. Hussie added that a publicity campaign for furnace heating was one of the results which should be accomplished, but that a national association of manufacturers should be formed, even though the association never appropriated one penny for advertising.

"George Harms, a well known manufacturer of Peoria, Ill., urged the immediate founding of the association. (It is interesting to note he has ever since been a valued and loyal member.)

"On question from the chair, an enthusiastic viva-voce vote favored immediate organization.

"Lewis Moore, Joliet, Ill., was the unanimous choice for temporary chairman of the meeting.

"On motion, the meeting tendered a vote of thanks to Mr. Hussie for his successful effort in bringing the manufacturers together."

FIRST OFFICERS

The first officers were then elected as follows:

President—John D. Green, Detroit, Mich.

Vice President—J. J. Giblin, Utica, N. Y.

Treasurer—W. G. Wise, Akron, O.

Executive Committeemen—E. P. Miller, Marshalltown, Ia.; John A. Howard, Dowagiac, Mich.; Charles F. Seelbach, Cleveland, O.

NOTE: The selection of Secretary was left to the Executive Committee, which met in Detroit on February 6, 1914, and elected Allen W. Williams of Columbus, Ohio, as Secretary.

In this simple manner an association was formed which has been found essential under all conditions.

OBJECTS AND AIMS

The Executive Committee, which was charged with proposing a list of "Objects and Aims" for the organization, met on February 6, 1914, in Detroit and their recommendations were as follows:

"1. *Formula for Warm Air Installations*
That definite rules be adopted for the figuring of heating requirements of any residence or other building, in conjunction with definite rules as to piping, installation and cold air supply for warm air furnace heating, at the same time providing for automatic ventilation, when desired.

"2. *Architects*
That closer touch be secured with architects in order to show them the advantages of warm air heating systems and obtain, either by personal solicitation or through their association, the adoption of approved rules and specifications for the proper installation of warm air systems for heating.

"3. *Advertising*
That since all furnace manufacturers are certain of the superior merits of warm air heating, but the public is not, when some approved method for warm air furnace installation is agreed upon, a publicity campaign, which will not only appeal to dealers but enlighten and attract consumer buyers, be conducted.

"4. *Selling Instructions for Dealers*
That methods and plans to be in closer touch with the dealers in warm air furnaces be formulated and dealers furnished with assistance to correct all wrong impressions as to furnace heating.

"5. *Selling Instructions for Manufacturers*
That the association prepare itself to advise manufacturers as to the ways and means of educating and instructing their sales organizations so they may combat unfair technical and scientific arguments against warm air heating used by competitors.

"6. *Formula of Manufacturers' Costs*
That the association prepare and adopt a Uniform Cost System for Furnace Manufacturers.

"7. *Formula for Dealers' Costs*
That a Dealers' Cost Formula be prepared.

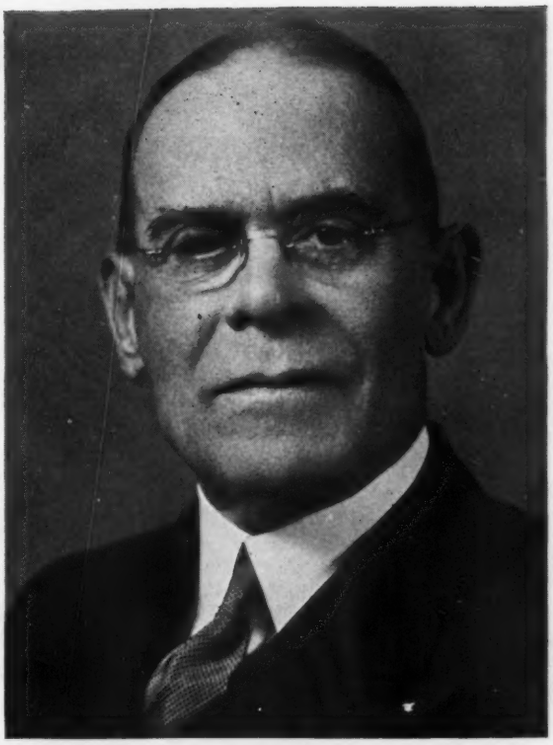
"8. *Salesmen's Bureau*
That the association secure and disseminate among the members of the association information in regard to salesmen.

"9. *Credit Bureau*
That the association exchange facts in regard to the credit standing of the trade.

"10. That each of the above recommendations be assigned to a committee of three to study and report to the association at its next meeting."

A Constitution and By-laws were prepared and for several years proved adequate for the successful operation of the association, the purposes of which were to be research, engineering, education, publicity and cooperation in other activities as they might develop to promote the best interests of the furnace industry.

While most of the members of the association have always been those located within the United States, the organization has had valuable support of the General Steel Wares, Ltd., in Canada, a large furnace manufacturer, and when "Dealer" memberships were available, Australia, New Zealand and England heating contractors were represented on the membership roll.



Allen W. Williams
Secretary, Managing Director and Treasurer,
1914-1940

AUTHOR'S FOREWORD

This story of the National Warm Air Heating and Air Conditioning Association is not offered as a literary production, nor does imagination have any part in this chronicle of a successful worthwhile trade association which has gained a merited respect and is incidentally an outstanding example of the possibilities of cooperation in industry.

It is published as a tribute to each of the many individuals, companies and all others who have unselfishly assisted in making the National Warm Air Heating and Air Conditioning Association with its splendid activities possible.

Allen W. Williams

The codes, forms, books and literature published by the association have been furnished to heating engineers, heating contractors and others in Russia, France, Turkey, Holland, China and South American countries.

First installment of History of the National Warm Air Heating and Air Conditioning Association, to be run monthly in serial form in AMERICAN ARTISAN. Installment No. 2 will appear in the May issue.

BUY WAR BONDS and STAMPS!

On Our Industry's Front

Materials for Small Construction

THE plan for the allotment of controlled materials under CMP for certain types of construction costing less than $10,000 has been announced by the War Production Board.

On March 4, WPB empowered Regional Offices to authorize the beginning of agricultural and many types of commercial construction costing less than $10,000. Agricultural construction covered by the procedure includes barns, silos, and other farm buildings, while commercial construction includes such buildings as stores, garages, laundries, office buildings, warehouses, and similar structures.

No application to a claimant agency for allotment of controlled materials is necessary for construction of this type. Under the procedure now set up, a simplified PD-200-c form applicable to these cases will be used. This form, which is an application for priority assistance or application to begin construction without priority assistance, requires submission of a material list.

The materials it is proposed to use are listed and the forms are filed with the War Production Board District Office. The forms then go to Regional Offices which make allotment of controlled materials and assign preference ratings on CMP-L-127 forms. Attached to this form is a copy of the builder's PD-200-c showing the materials which have been approved.

The two claimant agencies having jurisdiction over this type of construction, the Office of Food Administrator and the Office of Civilian Supply, WPB, have authorized Regional Directors to make the necessary allotments of controlled materials.

In the case of non-war housing costing less than $10,000, the applicant must file PD-105 and PD-105A forms with the nearest Federal Housing Administration field office. These forms then come to WPB Regional Offices with the recommendation of FHA officials. The WPB Regional Director assigns an allotment number and a preference rating on Form CMP-L-127. Non-war housing includes the so-called "hardship" cases, which arise as a result of homes being destroyed by fire, or where new homes are made necessary because of reasons of health or safety.

◆

Fuel Oil Ration Stubs

OIL-RATIONED householders should preserve the identity stub of their heating ration as it will be required when next winter's rations are issued.

The stub is the remaining part of the coupon sheet after all the individual coupons have been removed. It contains the code number of the individual's ration, the date of issuance and expiration, the amount of the ration, and similar information. Local boards will require the consumer to present the stub when the 1943-44 rations are distributed.

The present plan is to issue the new rations during the early part of the summer in order to enable the fuel oil industry to follow its customary procedure of filling customers tanks during the warm weather.

Consumers who have deposited their heating ration coupons with a supplier will receive the identity stubs as soon as the coupons are exhausted. Under the rationing regulations, the dealer must return these to the customer within 48 hours after all the coupons are used.

OPA officials reiterate that whatever portion of this year's ration the consumer saves will not be deducted from the new ration. The ration coupons, of course, must be used before October 1, but whatever amount of oil the householder has left over from the present heating year's allotment will not be charged against him.

◆

Compliance Check for CMP

PLANS for checking compliance with Controlled Materials Plan regulations are now being formulated by the War Production Board Compliance Division and in the near future, a representative group of between 5,000 and 10,000 users of controlled materials throughout the United States will be checked by investigators for the Division.

Approximately 1,200 field inspectors will be used in the investigation, most of them being on loan to the War Production Board from the Federal Trade Commission, the Wage and Hour Division of the Department of Labor, the Federal Security Agency, and others.

While all CMP regulations will be covered in the survey, special emphasis will be placed on inventory controls and proper use of allotment numbers to obtain controlled materials.

The survey will be extended later to cover all companies operating under CMP, including producers of both "A" and "B" products and prime and secondary consumers.

◆

More Labor Shortage Areas

INDUSTRIAL areas in which labor shortages have become acute now number 36. A discussion of this situation appeared on page 36, March, 1943, issue. Three communities—Akron, Ohio; Bath, Maine, and Portsmouth, New Hampshire—however, have been shifted from the shortage list to the group of areas in which there is a present balance of labor supply and demand.

The communities added to the list of shortage areas are Portland, Maine; Burlington, N. C.; Evansville, Ind.; Gary-Hammond-South Chicago, Ind. and Ill.; Tampa, Florida; Savannah, Georgia; and Wilmington, North Carolina.

The surplus labor areas have been designated by the War Manpower Commission as those in which an effort should be made to renew contracts, place new contracts and locate new production facilities. It was suggested that contracts should not be let or renewed in shortage areas unless alternative facilities are not available elsewhere.

L-79 Is Still Important

IN THE Priority Digest in the January ARTISAN, we stated that because of other governing orders, order L-79 has now lost some of its essentiality and is not as important an order as when first issued.

That statement was, of course, a personal opinion and is not agreeable to everybody. For example, H. C. Jaynes, Assistant Purchasing Agent, F. O. Schoedinger, Columbus, Ohio, a man who has handled a large share of the priority problems of this ramified business believes that L-79 is still important and, at our request, explains why. Mr. Jaynes writes—

February 10, 1943.

Mr. J. D. Wilder, Editor,
Keeney Publishing Company,
6 North Michigan Avenue,
Chicago, Illinois.

Gentlemen:

"The intent of Limitation Order L-79 when it was first issued was to preserve certain types of plumbing and heating equipment in the hands of Manufacturers, Distributors, Wholesalers, Retailers, and Installers and to direct its sale for essential use only.

"The original order applied to all distributing units from the manufacturer to the retailer and installer.

"Because 'heating equipment' is a seasonal item the order froze large quantities of this equipment in the hands of manufacturers and distributors due to the fact that the retailer or installer could not extend a rating to build up his stock prior to the actual selling season. To relieve this situation L-79 was amended. Some items were deleted, but the main purpose of the amendment was to relieve the manufacturer and distributor by placing the restrictions of the order entirely upon the person selling to the ultimate consumer. This, in my opinion, did not alter the intent of L-79 whatsoever, as the sale to the ultimate consumer has always governed the manufacturer and distributor. It did, however, place added responsibility upon the retailer or installer, as heretofore many have looked to the manufacturer or distributor for guidance.

"When L-79 was amended large quantities of heating equipment were sold to retailers or installers without Priority which led those who were not familiar with L-79 to believe that they could dispose of it as they pleased. This caused complaints among the trade of which some were checked for violation. I know this to be a fact, as some complaints came to me direct.

"At this point I must agree that L-79 has been stripped of some of its provisions. However, it is still in effect and still limits the sale of certan types of equipment to an A-10 or better rating or by special authorization which must be recognized by the retailer or installer regardless of how he acquired the equipment.

"I cannot agree, however, that L-79 has been stripped of its importance by the issuance of other limitation orders that direct production. On the contrary, it strengthens the importance of L-79, due to the quantity available which must be preserved for essential use.

"For example:

"Limitation Order L-22 limits the production of warm air furnaces through the manufacturer, while L-79 restricts the sale of such furnaces to the ultimate consumer. Therefore, a warm air furnace sold without priority or special authorization to the ultimate consumer would be in violation of L-79 and not L-22.

"Limitation Order L-31 and L-56 which governs the distribution of fuel oil and natural gas does have bearing on the sale of certain equipment. However, L-79 still limits the sale of such equipment to an A-10 or better rating or by special authorization."

◆

Save the Stove Pipe

STOVE pipe and stove pipe elbows will be obtainable only in limited quantities next winter, warns Plumbing and Heating Division of the War Production Board. Therefore, all persons using heating stoves should act to preserve these accessories needed to connect stoves to the chimney.

Before storing stoves for the summer, the following precautions may be suggested by dealers to their customers:

1. Clean pipe and elbows inside with a cleaning preparation to dissolve rust and then remove rust with sandpaper or similar material.
2. Apply asbestos furnace cement to all small holes and scratches. This cement can be obtained at hardware stores for a few cents.
3. Carefully apply a good heat resisting paint.
4. Wrap in heavy paper and store over summer in a dry place. These precautions will save both pipe and elbows for next season.

◆

Fuel Oil Record

USE of fuel oil in the 17 Eastern states and the District of Columbia was cut to 60 per cent of normal during the six months from October 1 to March 31—the first winter of fuel oil rationing—the Office of Price Administration reports.

These months comprise the period of heaviest fuel oil demand and consumption approximates 115,500,000 barrels.

Says OPA—"Admittedly, the rationing procedure itself contained some awkward features. It should be remembered, however, that we had no precedent to guide us in setting up the procedure for rationing the approximately 3,000,000 (three million) Eastern consumers who use fuel oil for heating. We had to take care of the giant office building and the one-burner kerosene heater. The influence of the weather on heating needs had to be taken into account. We now have the experience of the past winter to draw upon in formulating next year's procedure. It is our aim to eliminate, wherever we can, those features of the plan which the consumer, the industry or the local boards have found to be excessively time-consuming or troublesome."

Consumers in the East Coast states—the area of gravest shortage—originally received ration coupons entitling them to buy 99,978,000 barrels of oil for heating purposes during the twelve months from October 1, 1942, to September 30, 1943, officials stated. This rationed demand represented a reduction of about 38,000,000 barrels from normal annual consumption.

NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSOCIATION Says

HOW MANY FURNACES?

WE are concerned, in 1943, with those furnace installations (of the 7,000,000 installed in the United States) which are beyond repair and for which new replacement furnaces are necessary.

It has been rumored that 50,000 furnaces will be the permitted production for the civilian replacement market in the United States for 1943. Will 50,000 furnaces be sufficient?

Government records, published in the year 1940, show that the life of a furnace is twenty years. In the year 1923—20 years ago—365,000 were produced which means approximately the same number were sold and installed. Taking the government's figures, we would then, under normal business conditions, replace in 1943 the approximate 365,000 furnaces sold in the year 1923.

Of course, business conditions are not normal this year. Our industry is in a depression during a period of the greatest national income on record and in the middle of the most devastating war of all time.

Based on information received from responsible sources in our industry, it is the opinion of National Warm Air Heating and Air Conditioning Association that approximately 200,000 furnaces for civilian replacement for 1943 would take care of minimum essential needs along with a much more extensive use of repair parts.

But we won't have approximately 200,000 units unless the representatives (heating dealer and contractors) of the 7,000,000 furnace users reflect to this office or to the War Production Board or both, the "consumer hardship" cases which have come to their attention thru inability to obtain replacement furnaces and other parts when needed.

This entire industry has a serious service obligation to fulfil to the users of the products of the industry. Dealers are the intermediaries between government and consumers and should reflect the consumers' problems to government direct, or thru this office. In this way the consumers of the industry will in effect write the order governing production. In my opinion nothing would be more simple and sound, and after all, have not consumers always written production orders?

Maximum production and service which at the same time is a minimum production and service, are the objectives we should reach for to protect life and property at home and then later, when the boys come back, to enjoy with them the pursuit of happiness.

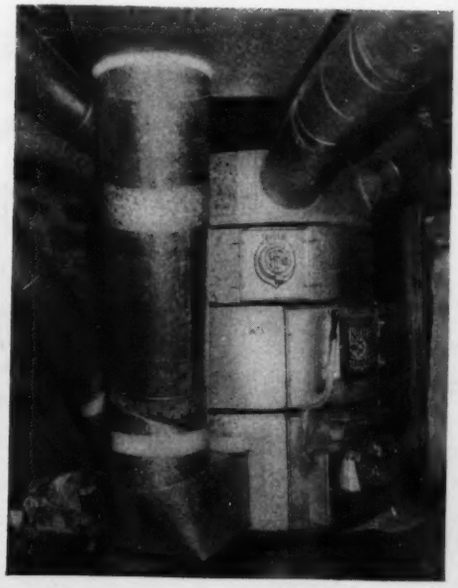
Can we help?

Geo. Boeddener
Managing Director

DEVOT

RESIDENTIAL AIR CONDITIONING

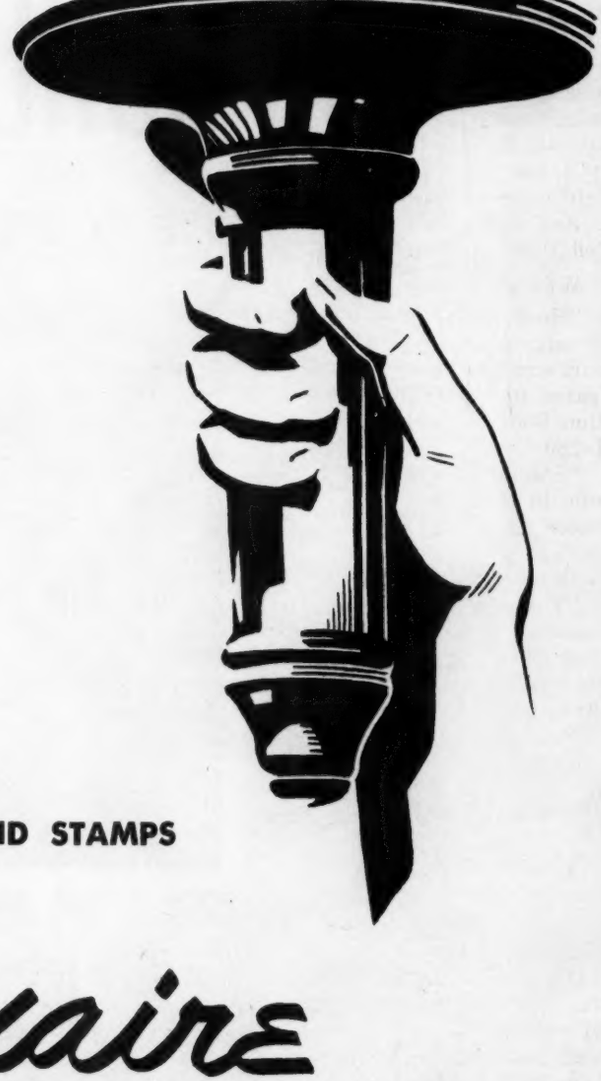
SECTION



DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING

HONEST WORK

Keeps the Torch of Liberty Burning



FROM the swirling sands of Algiers to the disease infested swamps of Guadalcanal our fighting American boys scattered on all parts of the globe know no end of HONEST WORK, hour after hour, day after day, with never a thought of extra pay, just fighting to keep the Torch of Liberty burning that we might live in peace and security.

Are we at home, who are still able to enjoy the privileges of a free country, matching these fighting boys of ours in HONEST WORK by producing everything possible we can, so they, too, can again come home and enjoy these privileges we are free to enjoy under the Torch of Liberty?

BUY MORE WAR BONDS AND STAMPS

Luxaire

WARM AIR FURNACES . . AIR CONDITIONING UNITS . . COAL . . GAS . . OIL

THE C. A. OLSEN MANUFACTURING CO., ELYRIA, OHIO

L-280 Is Amended—

If You Have Blowers in Stock, You Can Sell Them

THE advertisement shown appeared a short time ago in a number of newspapers in cities where mail order houses maintain retail stores. The question immediately arose—"how can the mail order houses sell furnace blowers when sale is prohibited under L-280?"

The editors took this matter up with WPB and were advised that "mail order houses filed an appeal after March 9 and were granted permission to sell stocks on hand."

Apparently WPB then realized that this action was discriminatory because hundreds of furnace dealers with blowers on hand did not have facilities for filing appeals, as did the mail order houses, and, subsequently, L-280 was amended March 30 to permit sale of certain types of blowers in dealer inventory.

Any dealer with furnace blowers in stock may now sell these blowers without any priority.

WPB's explanation of the action follows:

"Householder sizes of centrifugal type air boosters or underfire coal burning fans used in connection with furnaces and now in the hands of dealers were released for distribution March 30 by the War Production Board in an amended General Limitation Order L-280.

"Specifically the amended order releases for installation in connection with new or existing heating furnaces all new air boosters or fans in inventories of dealers that have a capacity of 2,500 CFM and less with motors of one-quarter HP and less.

"These items originally were frozen for use in war housing projects. They are released today because they are too small to be installed with the heating units in the housing projects now planned or under construction."

Following are governing sections of the new order:

PART 3168—FANS AND BLOWERS

(General Limitation Order L-280 as Amended March 30, 1943)

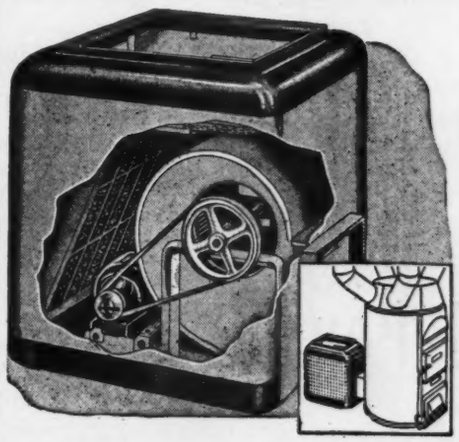
§ 3168.1 *General Limitation Order L-280—(a) Definitions.* For the purposes of this order:

(2) "Fan or blower" means any new device or machine which moves, compresses or exhausts air or other gases by centrifugal, rotary or axial means; except (i) wall type propeller fans having a blade diameter of less than 17 inches; (ii) ceiling, air circulator, desk, wall bracket, and portable window fans, and pedestal type fans of a portable nature; (iii) fans and blowers manufactured by a person solely for incorporation into other machinery or devices (including pulverizers, stokers, and boilers) also manufactured by him; (iv) propeller type fans for use as a part of internal com-

(*Continued on page* 80)

SEARS, ROEBUCK AND CO.

NOW YOU CAN BUY AN AIR BLOWER WITHOUT A PRIORITY!



Check All These Advantages!

- **SAVE** fuel because circulating air heats faster, more efficiently!
- **CLEAN** because all the air passes through filters which remove most of the dust and dirt in the air.
- **HEALTHFUL** because the blower helps keep the temperature more uniform as well as removing dust and dirt!
- **COOL,** yes you can keep your house degrees cooler in summer by proper application of your air blower.

While They Last! **49.95**

MODERNIZE YOUR HEATING SYSTEM!

By a special directive, you may now purchase, without a priority, a Sears modified air-conditioner. Attached to your warm air furnace, you can enjoy modern, clean forced air heat in winter, and clean, cooler air in summer. Chages air completely 4 to 7 times hourly. Quiet, economical, rubber mounted blower and motor. Large filtering surface removes dust and dirt, saves cleaning bills, is more healthful. Use with coal, oil or gas fired warm air furnaces. Get your air conditioner Now!, while they last, at Sears!

USE SEARS EASY PAYMENT PLAN

SEARS, ROEBUCK and CO.

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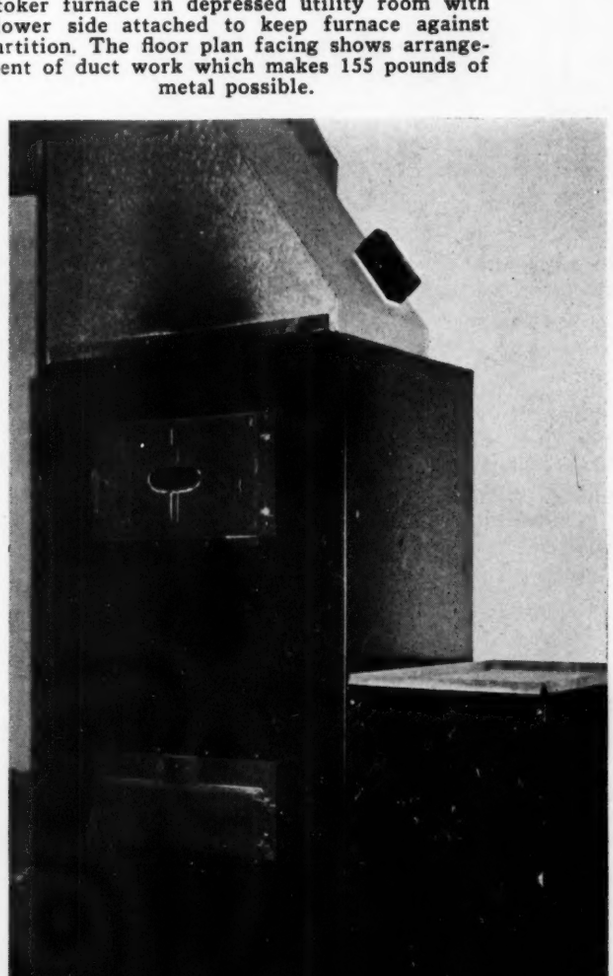
Left — Typical minimum-critical-material-use house as built in Detroit, and, below—Self Stoker furnace in depressed utility room with blower side attached to keep furnace against partition. The floor plan facing shows arrangement of duct work which makes 155 pounds of metal possible.



155 Pounds of Duct 12 Hours of Labor 420-Pound Furnace

IN THE "Arsenal of America"—meaning Detroit—where war production goes on 24 hours a day, seven days a week, the problem of housing is acute to a degree impossible to comprehend in cities not so completely turned over to war production.

Obviously with the scarcities of critical materials, the Detroit area is doing things in heating which other areas in the country may never reach before the war is over. An interesting case in point is the type of residence being built by Vernon H. Sauble, a Detroit building contractor, shown in an exterior photograph where a brick exterior requires no critical material. The amount of metal used inside meets the War Housing Manual specification for minimum. Everything is done to conserve materials.

Material Saving Measures

For example, the heating system designed and installed by Northern Air Conditioning Co., of Detroit, probably shows as much saving of critical material as any part of the structure. First of all, the furnace is located in a depressed utility room which is at grade level or a step or two down and two or three steps below the first floor level. The furnace itself is the new Viking Self-Stoker, which with a fan and blower weighs 480 pounds; there is approximately 420 pounds of metal in the furnace. In the piping layout for the typical job shown, approximately 155 pounds of duct work are required to distribute and return the air. Further to conserve duct work, first floor registers are in the high side-wall for good distribution above the furnace and on the second floor the registers are in the baseboard.

The return air system is closed, using joist spaces sealed with insulating board, with the joists and cross joist ducts of substitute material or of wood or of masonry. In all cases the builder erects these ducts—not the heating contractor.

Return air from second-floor rooms is conducted to the ducts through unlined stud spaces, so that no metal is required for the return air. The return face box at the top and in some cases a box at the bottom of the stud space are the only metal items in most return systems.

The 155-pound warm air distribution system is practically identical from job to job in all 80 houses in the project photographed, so it was possible for Northern Air Conditioning Company, the contractor, to fabricate complete warm air duct systems in the shop and deliver the duct systems ready to install.

In the first houses in the project, the duct systems were made of 28-gauge galvanized iron, but toward the end of the job, 28-gauge black iron will probably be used. Substitute board pre-

formed ducts were ordered for the job, but delivery could not be obtained, so in order to rush the houses to completion the Detroit WPB granted Northern Air Conditioning sufficiently high priorities to obtain galvanized or black iron for the duct work.

To erect the warm air system, Northern Air Conditioning works one-man crews. One man sets the furnace and puts the registers and grilles in place, requiring approximately five to six hours to do this work. The furnace, of course, is delivered completely cased and is placed in the utility room by the trucker, so it is only necessary to shift the furnace to its proper location. Another one-man crew erects all the duct work and cuts the second-floor openings which can not be located before the duct work is ready to install. This requires another five to six hours of labor time.

The total for one of these jobs as pictured on the blueprint, therefore, is approximately 12 hours' labor time.

The Control System

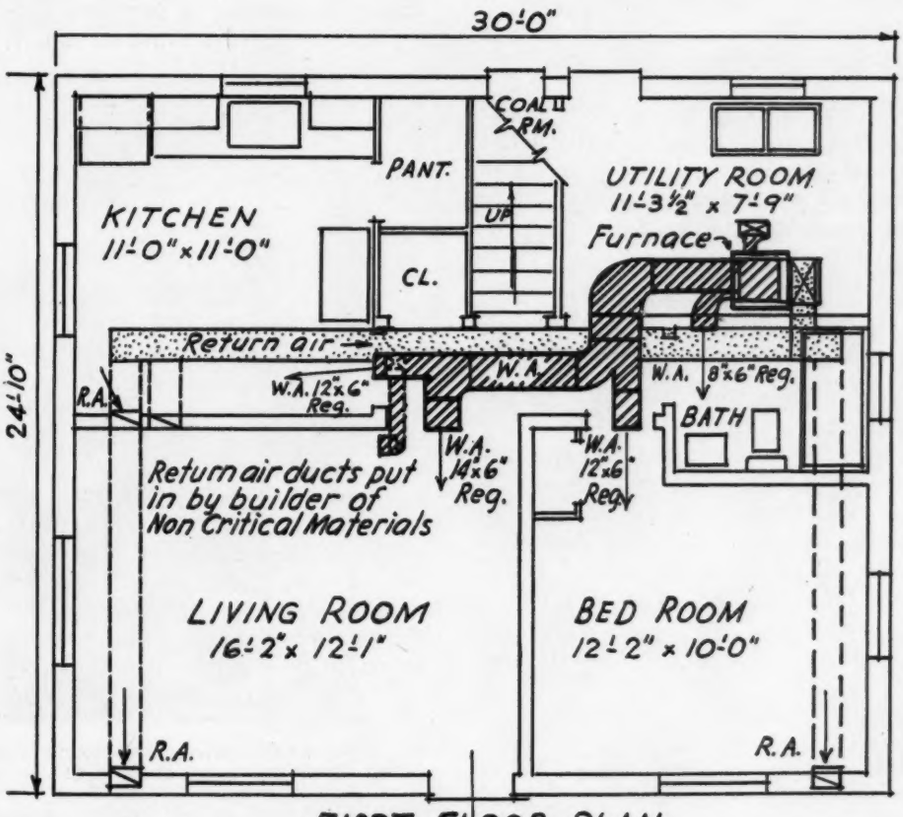
There is no thermostat or electrical control system on these installations. Instead, a manual control is set by the owners to maintain a pre-selected combustion rate. When the heat output falls below the selected setting, the control opens the draft damper and when the heat output reaches the maximum selected, the damper closes and the check opens. This operation has nothing to do with outside temperatures, or even with inside temperatures, but is set by the house owner to maintain comfortable conditions. It is possible, however, to control the operation of the heater with a room thermostat if desired.

Furnace Characteristics

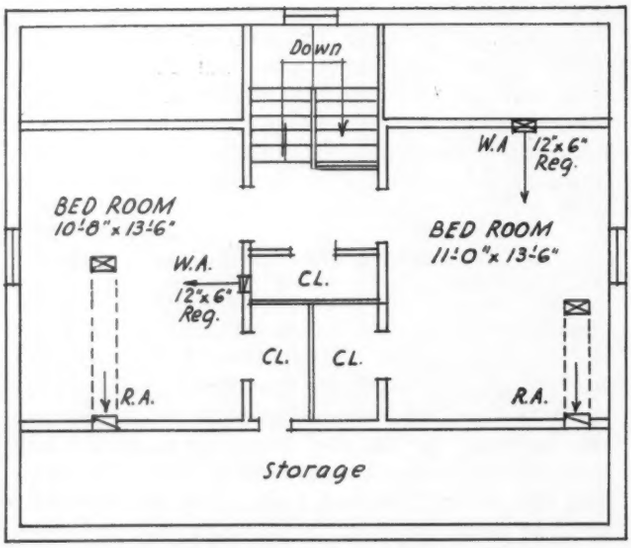
This unit gets its name from the fact that the combustion chamber is charged with a heavy filling of coal, which burns at the bottom, rather than at the top with the gas moving downward through the fuel bed and upward at the sides of the furnace. As the coal burns away at the bottom, coke is formed immediately above the grate and the entire fuel bed falls down in the chamber. In mild weather the furnace can run along for considerable time without recharging and in severe weather shaking the grates and adding fuel is claimed by the manufacturer to be the only service required. The fuel chamber holds from 100 to 110 pounds of coal and the combustion rate varies from ⅔ of a pound of fuel per hour on low setting to 6½ pounds of fuel per hour at high combustion rate.

At the 6½-pound combustion rate and in the largest size of the self-stoker furnace, the output is approximately 60,000 Btu, which is the calculated Btu heat loss of the houses photographed.

In view of the fact that this particular furnace



FIRST FLOOR PLAN



SECOND FLOOR PLAN

is one of the types of units favored by the housing agencies for the emergency period, we reproduce below certain data released by the Bureau of Standards.

"The SELF STOKER heater is a magazine coal space heater with a capacity of about 100 pounds of fuel. The magazine is almost completely sealed at the top, with the combustion occurring near the bottom of the bed of fuel. The flame and products of combustion proceed in a nearly horizontal direction just about the grates toward the sides of the heater and thence upward between the outside jacket and the refractory pieces that surround the magazine. The flue gases are made to scrub the top of the heater by means of baffles before passing up the chimney. A draft controller incorporating a bimetallic coil is attached to the smokehood of the heater. Levers attached to the bimetallic element are used to operate both the ashpit damper and the check draft door. The function of the draft controller was to regulate the two damper doors to produce a steady temperature at the controller.

Effect of Firing Procedure

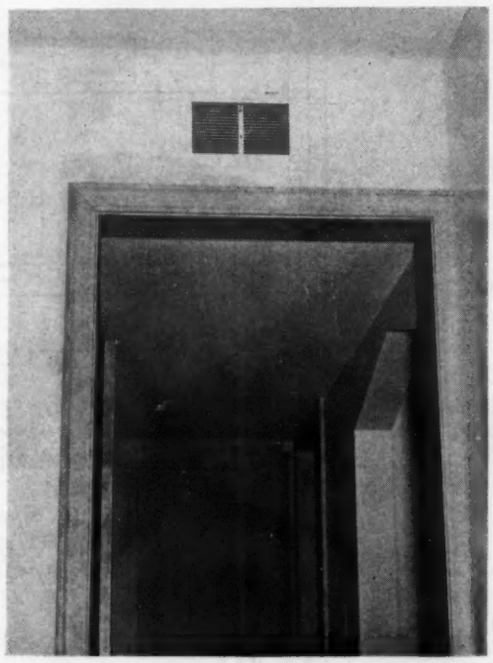
"Tests were made with both anthracite and bituminous coal of stove size over a range of burning rates. Both fuels were burned satisfactorily. Considerable gray smoke issued from the chimney for twenty or thirty minutes after refueling the heater with bituminous coal. A barely perceptible blue, gray smoke was discharged for an hour or two after refueling and then none was visible at all. In our opinion the smoke would not be considered objectionable. The heater was able to hold fire with either fuel at a combustion rate of about ½ pound of coal per hour for an extended period of time. A fire was held for 44 hours with anthracite coal and for 65 hours with bituminous coal at the above rate of combustion and the indication was that the banked condition could have been maintained considerably longer.

"Data indicate combustion efficiencies in the range from about 67 per cent to 81 per cent during the test periods. The efficiency realized in service would probably be somewhat less than this due to the fuel lost through the grates into the ashpit and the lower average combustion efficiency that would occur when the entire magazine of fuel was permitted to burn without any poking or shaking of the fire. It was estimated that at least 10 per cent of the fuel fired was shaken through the grates during the test periods when the fire was attended about seven hours after refueling. The amount of fuel shaken through the grates would be different with different operators.

"The carbon dioxide content of the flue gases gradually decreased from the peak reached during the first hour or two of the test as each test proceeded when no attention was given the fire. Regular shaking of the fire to remove the ashes that were being deposited would probably increase the average combustion efficiency, but would also increase the amount of fuel shaken into the ashpit.

"Test No. 9 showed the results obtained with the draft controller set at the highest burning rate when a stack draft of 0.03 inches W. G. was maintained. Bituminous coal was burned at a rate of 6.15 lbs. per hour. The average CO_2 was 11.1 per cent and the average stack temperature was 840°F during the six-hour test period. The indicated combustion efficiency was about 72 per cent. The bituminous coal used had a heating value of 14,080 Btu per pound. The indicated output, therefore, was 62,000 Btu per hour. When coal was burned at a rate of 2 pounds per hour as in Test No. 6, the indicated combustion efficiency was about 81 per cent.

(*Continued on page* 75)



Kitchen register above door and hall through which the warm air main is run as shown on first floor plan. Second floor registers are in baseboard, so all registers are at about the same height above furnace.

Cummings' Summer Service for Oil Burners and Stoker Users

E. F. CUMMINGS

KEEP 'em HEATING

E. F. Cummings & Son

24-Hour Service

Stokers . . Blowers . . Oil Burners

Davenport, Iowa

1920 Division Street

W. E. CUMMINGS

KEEP 'em HEATING

Sheet Metal Work

Dear Friend:

The time of the year has again arrived for us to offer our summer service plan to you. This work should be done as soon after the heating season as possible to prevent rust, soot, and fly ash, your heating plant's worst enemies – from permanently hardening in your furnace, boiler and stoker. By not removing them you insulate your heating surfaces from fire, thus increasing your fuel expense, greatly in excess of this service.

The ever increasing customer demand for our summer service plan indicates that more and more home owners realize the necessity of having this work done by E. F. Cummings & Son, whose foremost thought is better stoker operation at lower cost for the user.

This work is done by capable stoker and furnace mechanics under the supervision of a heating engineer.

All that you have to do to take advantage of this offer is to sign and return coupon at bottom of this page today.

Very truly yours,

E. F. CUMMINGS & SON

E. F. Cummings

Heating Engineer

IN Davenport, Iowa, the firm of E. F. Cummings & Son, in the last few years, has established a popular summer service for owners of stokers and oil burners; the firm also offers a service to owners of forced warm air furnaces, including a check of the firing device, cleaning and changing the filters, adjusting the controls and checking the furnace for any needed parts; and for owners of any type of heating unit a cleaning, recementing, painting service plan.

To obtain customers for this service, a letter is mailed in the late winter and spring to all previous customers and to an ever expanding prospect list. The letter is shown in the illustrations.

This year's letter will be mailed to approximately 3,000 home owners. If the return is as good as in former years, the firm feels confident about 1,800 inquiries will be received and probably 1,600 orders will be booked for handling during the summer.

The repairs and resets resulting from the service orders always have resulted in a sizable volume, and this year, with owners very much concerned with fuel saving and maximum comfort, the firm anticipates more repair work and resetting than in previous years.

In order to save office time and to give the inquirer a quick estimate of what is required, a complete card file is kept in the office of every stoker, oil burner, furnace or boiler the firm has ever worked on. These card records show the make, size, type or model, when installed, what has been done to date and when, what type of controls and what work has been recommended but not done.

Quite a list of steady customers has been built up who give a standing order for the firm to do the summer service from year to year without any special acceptance. For this type of customer the firm cleans or replaces the filters, does all the work on the stoker or burner specified in the service plan, cleans the heating unit, checks the controls—in short, supplies the complete summer service plan shown on the letter.

(*Continued on page 77*)

OMPLETE AND IMPROVED SPECIFICATIONS

Cummings' Comprehensive Summer Stoker Service

Under Direct Supervision of Capable Service Engineer

- ☐ (1) COMPLETE VACUUM CLEANING OF: FLUE PASSAGES OF FURNACE OR BOILER SMOKE PIPE, COMBUSTION CHAMBER, AND CHIMNEY BASE.
- ☐ (2) PAINT FRONT OF FURNACE OR BOILER WITH METAL PAINT.
- ☐ (3) RECEMENTING OF SMOKE PIPE INTO CHIMNEY.
- ☐ (4) CLEAN RETORT AND AIR TUBE.
- ☐ (5) CHECK COAL FEED SCREW
- ☐ (6) CLEAN AND PAINT INSIDE OF STOKER HOPPER.
- ☐ (7) CHANGE OIL IN STOKER TRANSMISSION.
- ☐ (8) CHECK AND OIL STOKER MOTOR.
- ☐ (9) CHECK ALL CONTROLS AND WIRING ON STOKER AND CONTROLS.
- ☐ (10) CLEAN AND ADJUST THERMOSTAT.

This service will be performed on route service schedule.
Customer to be notified one day in advance.

Prices

(A) COMPLETE SUMMER SERVICE	$ 8.50
(B) FALL START-UP SERVICE	2.00
	$10.50
BOTH FOR	$ 9.50

is service plan is an investment you can't afford to miss. It more than pays for itself in fuel savings.

OTHING TO PAY UNTIL WORK IS COMPLETED TEAR OFF AND MAIL COUPON TODAY

F. CUMMINGS & SON
20 Division St. Davenport, Iowa Date: _____

I accept your Summer Service Offer with the understanding that work will be done on Route Service Schedule and that I will be notified one day in advance.

[A] and [B] Signature _____
ease Check Address _____
Phone _____

Simplified—*but better*—Gravity Systems

This is the third of several articles reprinted from University of Illinois, Engineering Experiment Station Bulletin No. 45. The new simplified gravity system proposes seven changes from the Standard Gravity Code —(1) leader pipe size in Btu, not sq. in.; (2) a unit piping system; (3) consideration of long leaders plus several elbows; (4) fewer pipe pieces; (5) furnace rated in Btu delivery at the register; (6) five good return systems; (7) 16, not 100, return air grille sizes.

APPENDIX A

Design Tables* for Gravity Warm-Air Furnace Systems

OUTLINE of Procedure.—The following outline of procedure is suggested as a method for applying the tables of commercial sizes to the design of a gravity warm-air furnace system:

(1) Determine the heat loss from each room to be heated in terms of B.t.u. per hour.

(2) Make tentative layout of the basement plan to scale showing proposed location of
  (a) Furnace.
  (b) Smoke-pipe connection to chimney.
  (c) Warm-air registers (indicate whether

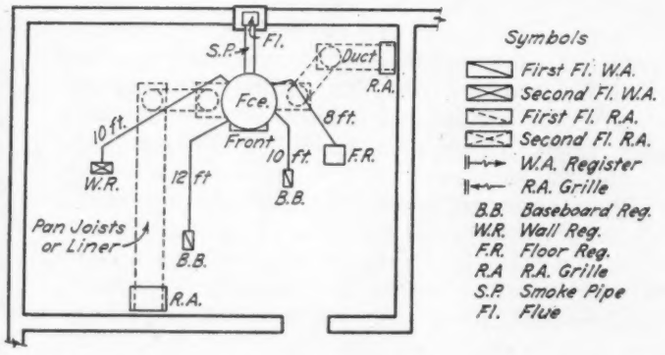


FIG. 8. TYPICAL BASEMENT PLAN OF GRAVITY WARM-AIR HEATING SYSTEM

floor, baseboard, or wall).
  (d) Return-air grilles.

(3) Indicate on each warm-air run (using symbols shown in Fig. 8)
  (a) Whether the room to be heated is on the first or second story.
  (b) The approximate length of leader pipe in basement.
  (c) The number of right-angle elbows required, including the elbow at the boot connection (consider each 45-degree elbow as equal to one-half of 90-degree elbow; consider the two sharp 90-degree elbows in a cross-over connection as equivalent to three 90-degree elbows).
  (d) Whether the register is to be located in the floor, in the baseboard, or in the wall.

(4) The recommended *combinations* of warm-air and return-air pipes, ducts, fittings, registers and grilles are designated as *Units*. These are listed in Tables 13 to 16. From Table 13 for first-story registers and from Table 14 for second-story registers, select the proper *unit* numbers for each room. Table 16 includes the information required to select the following component parts:
  (a) Stacks (indicate whether single-wall or double-wall).
  (b) Leaders.
  (c) Boots.
  (d) Stackheads.
  (e) Registers.

(5) Indicate on the basement plan the number and proposed location of the return-air grilles. Indicate the type of return duct system to be used, as indicated in Fig. 7.

TABLE 13
WARM-AIR CARRYING CAPACITY, B.T.U. DELIVERED, FIRST-STORY REGISTERS
Length of Leader Pipe—in Feet

Unit No.	4'	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'
B.t.u. Delivery With One Elbow											
1	6 020	5 850	5 680	5 510	5 340	5 170	5 000	4 830	4 660	4 490	4 3
2	7 620	7 400	7 180	6 970	6 760	6 540	6 320	6 110	5 890	5 680	5 4
3	9 400	9 140	8 870	8 600	8 340	8 070	7 810	7 540	7 270	7 010	6 7
4	13 350	12 970	12 590	12 210	11 830	11 450	11 080	10 700	10 320	9 950	9 5
5	17 520	17 020	16 530	16 040	15 550	15 050	14 550	14 050	13 560	13 060	12 5
B.t.u. Delivery With Two Elbows											
1	5 850	5 660	5 490	5 330	5 160	5 000	4 840	4 670	4 510	4 340	4 1
2	7 360	7 150	6 940	6 730	6 520	6 320	6 110	5 910	5 700	5 500	5 2
3	9 090	8 840	8 580	8 320	8 060	7 800	7 550	7 290	7 040	6 780	6 5
4	12 910	12 540	12 170	11 800	11 430	11 060	10 690	10 320	9 950	9 580	9 2
5	16 940	16 450	15 990	15 500	15 040	14 550	14 080	13 600	13 120	12 650	12 1
B.t.u. Delivery With Three Elbows											
1	5 620	5 460	5 310	5 150	4 990	4 830	4 670	4 510	4 350	4 190	4 0
2	7 120	6 910	6 710	6 510	6 310	6 110	5 900	5 700	5 500	5 300	5 1
3	8 780	8 530	8 280	8 030	7 780	7 530	7 290	7 040	6 800	6 550	6 3
4	12 450	12 100	11 750	11 400	11 050	10 700	10 350	10 000	9 650	9 300	8 9
5	16 360	15 900	15 440	14 970	14 510	14 050	13 600	13 130	12 660	12 200	11 7
B.t.u. Delivery With Four Elbows											
1	5 420	5 260	5 110	4 960	4 800	4 650	4 500	4 350	4 190	4 040	3 8
2	6 860	6 660	6 460	6 270	6 080	5 890	5 690	5 500	5 300	5 110	4 9
3	8 460	8 220	7 980	7 740	7 500	7 260	7 020	6 780	6 550	6 310	6 0
4	12 010	11 670	11 330	10 990	10 650	10 310	9 970	9 630	9 290	8 950	8 6
5	15 770	15 320	14 880	14 420	13 990	13 540	13 100	12 650	12 200	11 750	11 3
B.t.u. Delivery With Five Elbows											
1	5 240	5 090	4 940	4 790	4 640	4 500	4 350	4 200	4 050	3 910	3 7
2	6 630	6 440	6 250	6 060	5 880	5 690	5 500	5 320	5 130	4 940	4 7
3	8 180	7 950	7 720	7 490	7 260	7 030	6 800	6 560	6 330	6 100	5 8
4	11 610	11 290	10 950	10 620	10 300	9 970	9 640	9 320	8 990	8 660	8 3
5	15 250	14 800	14 380	13 950	13 520	13 090	12 650	12 230	11 800	11 370	10 9

Notes:
(a) Table 13 applies to baseboard and floor locations of warm air registers.
(b) Consider each 45-degree elbow as equal to one-half of a 90-degree elbow.
(c) Consider each 90-degree offset between boot and stackhead equal to two 90-degree elbows.
(d) In case of an end boot, include two additional elbows.

*Tables 13 to 16 inclusive have been adopted by the National Warm-Air Heating and Air Conditioning Association, and published in the "Standard Code Application Manual for Gravity Warm-Air Heating Systems."

TABLE 15
CARRYING CAPACITY, B.T.U. SERVICED, OF RETURN-AIR RUN

Unit No.	Type A B.t.u. per hr.	Types B and C B.t.u. per hr.	Type D B.t.u. per hr.	Type E B.t.u. per hr.
31	11 300	9 500	7 800	5 000
32	16 300	13 700	11 300	7 200
33	22 200	18 700	15 300	9 800
34	29 000	24 400	20 000	12 800
35	36 700	30 800	25 300	16 200
36	45 300	38 000	31 300	20 000
37	54 800	46 000	37 800	24 100
38	65 200	54 800	45 000	28 700

(6) Determine the size of return-air ducts and the grille size from Tables 15 and 16. The sum of the heat service capacities of the return-air ducts should equal the total heat loss from the entire structure.

(7) Select a furnace having a capacity rating, in B.t.u. per hour, equal to the total heat loss from the structure.

2. *Carrying Capacity of Warm-Air Runs.*—The following example will show how Tables 13 and 14 can be used:

Given: Sun room on first story—Use Table 13. *Two* 90-degree elbows in leader—see second group marked "B.t.u. delivery with two elbows."

TABLE 14
WARM-AIR CARRYING CAPACITY, B.T.U. DELIVERED, SECOND-STORY REGISTERS
Length of Leader Pipe—in Feet

Unit No.	4'	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'
B.t.u. Delivered With One Elbow											
22	8 370	8 140	7 900	7 670	7 430	7 190	6 950	6 710	6 470	6 240	6 000
24	10 040	9 760	9 470	9 190	8 900	8 620	8 330	8 050	7 770	7 480	7 200
	10 880	10 570	10 260	9 960	9 650	9 340	9 030	8 730	8 420	8 110	7 800
	11 710	11 380	11 050	10 720	10 390	10 060	9 720	9 390	9 060	8 730	8 400
	16 200	15 750	15 300	14 840	14 380	13 920	13 460	13 000	12 550	12 100	11 640
	18 920	18 390	17 850	17 310	16 780	16 240	15 710	15 180	14 640	14 100	13 570
B.t.u. Delivery With Two Elbows											
22	7 940	7 720	7 500	7 280	7 050	6 830	6 600	6 370	6 150	5 930	5 700
24	9 540	9 270	9 000	8 730	8 460	8 190	7 920	7 650	7 380	7 110	6 840
	10 340	10 050	9 750	9 460	9 170	8 880	8 580	8 290	8 000	7 700	7 410
	11 120	10 810	10 500	10 180	9 870	9 550	9 230	8 920	8 610	8 290	7 980
	15 400	14 970	14 530	14 100	13 670	13 230	12 800	12 360	11 930	11 500	11 070
	17 980	17 470	16 960	16 450	15 950	15 430	14 830	14 420	13 910	13 400	12 890
B.t.u. Delivery With Three Elbows											
22	7 530	7 320	7 110	6 900	6 680	6 470	6 250	6 040	5 830	5 620	5 400
24	9 030	8 780	8 520	8 270	8 010	7 750	7 500	7 240	6 990	6 730	6 470
	9 900	9 620	9 340	9 060	8 690	8 410	8 130	7 850	7 580	7 300	7 020
	10 530	10 240	9 940	9 650	9 350	9 050	8 750	8 450	8 160	7 860	7 560
	14 580	14 180	13 780	13 370	12 950	12 530	12 120	11 710	11 300	10 890	10 480
	17 040	16 550	16 070	15 580	15 110	14 620	14 140	13 660	13 180	12 700	12 210
B.t.u. Delivery With Four Elbows											
22	7 120	6 920	6 720	6 520	6 310	6 110	5 900	5 700	5 500	5 300	5 100
24	8 530	8 290	8 050	7 810	7 570	7 330	7 080	6 840	6 600	6 360	6 120
	9 250	8 990	8 720	8 460	8 200	7 940	7 680	7 410	7 150	6 890	6 630
	9 950	9 670	9 390	9 110	8 830	8 550	8 260	7 980	7 700	7 420	7 140
	13 780	13 390	13 000	12 610	12 220	11 830	11 440	11 050	10 670	10 280	9 890
	16 080	15 620	15 170	14 710	14 260	13 810	13 350	12 900	12 440	11 980	11 530
B.t.u. Delivery With Five Elbows											
22	6 700	6 510	6 320	6 130	5 940	5 750	5 560	5 370	5 180	4 990	4 800
24	8 040	7 810	7 580	7 350	7 130	6 900	6 670	6 440	6 220	5 990	5 760
	8 710	8 460	8 210	7 970	7 720	7 470	7 230	6 980	6 730	6 490	6 240
	9 370	9 110	8 850	8 580	8 310	8 050	7 780	7 510	7 250	6 980	6 720
	12 970	12 600	12 240	11 870	11 500	11 140	10 770	10 400	10 040	9 680	9 310
	15 140	14 710	14 280	13 850	13 420	13 000	12 570	12 140	11 710	11 280	10 850

21 for B.t.u. values multiply 11-22 values by 0.83.
23 for B.t.u. values multiply 12-24 values by 0.83.

(a) "B.t.u. deliveries" shown in Table 14 apply only to baseboard locations of warm air registers. When floor registers are used deduct 15 per cent from the "B.t.u. deliveries."
(b) Consider each 45-degree elbow as equal to one-half of a 90-degree elbow.
(c) Consider the two sharp elbows in a cross-over connection as equivalent to three 90-degree round elbows.
(d) Consider each 90-degree offset between boot and stackhead equal to two 90-degree round elbows.
(e) In case of an end boot, include two additional elbows.

TABLE 16
RECOMMENDED STANDARD COMMERCIAL SIZES OF LEADERS, STACKS, FITTINGS, REGISTERS, GRILLES, AND RETURN DUCTS

First Story Warm Air Ducts

Unit No.	Leader Pipe Diameter, in.	Register Size, in. (a) Floor	(b) Baseboard Size	(b) Baseboard Extension
1	8	8 x 10	10 x 8	2¼
2	9	9 x 12	12 x 8	2¼
3	10	10 x 12	12 x 9	3¼
4	12	12 x 14	13 x 11	5¼
5	14	14 x 16	.....	...

Note—When the calculations indicate a requirement for a given room greater than unit number 4, two or more smaller units totaling the required capacity are recommended.

Second Story Warm Air Ducts, Single Wall Stacks and Fittings

Unit No.	Leader Pipe Diameter in.	Stack* Size in.	Register Size, in. (a) Floor	(b) Baseboard Size	(b) Baseboard Extension	(c) Sidewall
11	8	10 x 3¼	8 x 10	10 x 8	2¼	10 x 8
12	9	12 x 3¼	8 x 12	12 x 8	2¼	12 x 8
13	9	13 x 3¼	8 x 14	12 x 8	2¼	12 x 8
14	10	14 x 3¼	8 x 14	12 x 8	2¼	12 x 8
15	12	12 x 5¼	.....	12 x 10	3¼	.....
16	12	14 x 5¼	.....	13 x 11	3¼	.....

*Recommended stack sizes. Tables may also be applied to 3-in. and 3½-in. stack depths.

Leader length about 8 ft.—see fourth column marked "8."
B.t.u. loss 16 896 B.t.u. per hr. Unit No. 3 has B.t.u. delivery of 8,580 B.t.u. per hr.

TABLE 16 (CONCLUDED)
RECOMMENDED STANDARD COMMERCIAL SIZES OF LEADERS, STACKS, FITTINGS, REGISTERS, GRILLES, AND RETURN DUCTS

Second Story Warm Air Ducts, Double Wall Stacks and Fittings

Unit No.	Leader Pipe Diameter in.	Stack Size, in. Internal	Stack Size, in. External	Register Size, in. (a) Floor	(b) Baseboard Size	(b) Baseboard Extension	(c) Sidewall
21	8	2½* x 10	3½* x 10½	8 x 10	10 x 8	2¼	10 x 8
22	8	3 x 10	3½ x 10½	8 x 10	10 x 8	2¼	10 x 8
23	9	2½* x 12	3½* x 12½	8 x 12	12 x 8	2¼	12 x 8
24	9	3 x 12	3½ x 12½	8 x 12	12 x 8	2¼	12 x 8

*Commercial sizes vary ½ inch from values shown.

Return Air Ducts

Unit No.	Duct Diameter in.	Area at Shoe Connection sq. in.	Metal Grille Sizes, in. Choose One (a)	(b)	(c)	When Joist Lining Is Used* No. of Joists Lined	Minimum Depth† in.	When Duct Is Used Choose One	
31	10	...	.....	8 x 14	10 x 12	1	7	14 x 6	12 x 8
32	12	...	6 x 30	8 x 24	12 x 14	1	9	22 x 6	16 x 8
33	14	170	8 x 30	10 x 24	14 x 16	1	12	28 x 6	22 x 8
34	16	220	10 x 30	12 x 24	.....	2	8	28 x 8	22 x 10
35	18	280	12 x 30	14 x 24	.....	2	10	36 x 8	28 x 10
36	20	340	14 x 30	18 x 24	.....	2	12.5	36 x 10	30 x 12
37	22	420	18 x 30	.....	.....	2 3	15.0 10.0	42 x 10	36 x 12
38	24	500	20 x 30	.....	.....	2 3	18.0 12.0	42 x 12	36 x 14

*Based on 14-in. space between joists.
†Use full depth of joist except when joist depth is less than minimum depth required, when pan must be used.

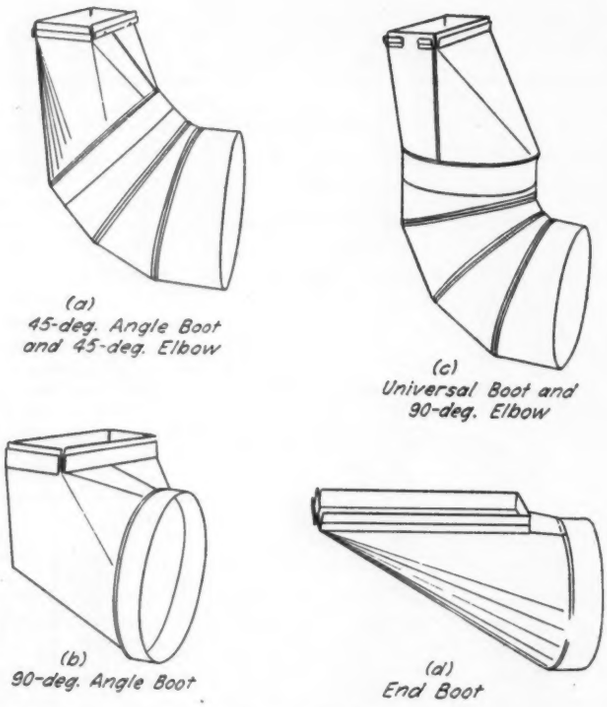


FIG. 9. TYPICAL WARM-AIR BOOTS

Hence, two No. 3 units will deliver 17 160 B.t.u. per hr. and are adequate.

Sizes—See Table 16 for recommended sizes for Unit No. 3.

3. *Carrying Capacity of Return-Air Ducts.*—The following example will show how Table 15 can be used:

Given: Return duct in hall—see diagrams of typical types A, B, C, D, and E in Fig. 7. Type C to be used—see third column marked "Types B and C." B.t.u. serviced assumed to be 30,000 B.t.u. per hr. Next largest value shown is 30,800. Follow horizontally to left to get Unit No. 35.

Sizes—see Table 16 for recommended sizes for Unit No. 35.

4. *Recommended Standard Sizes of Leaders, Stacks, Fittings, Registers, Grilles, and Return Ducts.*—The recommended commercial sizes of the component parts of warm-air and return-air duct systems are listed in Table 16. Four separate subdivisions are listed, as follows:

Units 1 to 5—First Story Warm-Air Ducts.

Units 11 to 16—Second Story Warm-Air Ducts, Single-wall Stacks and Fittings.

Units 21 to 24—Second Story Warm-Air Ducts, Double-wall Stacks and Fittings.

Units 31 to 38—Return-Air Ducts.

The tables are based on the use of the boots designated as the 90-degree angle boot, universal boot and 90-degree elbow, and 45-degree angle boot and 45-degree elbow in Fig. 9. If the one designated as the end boot is used, two additional elbows should be included in counting the total number of elbows in the run, as discussed in Section 6, Appendix C.

APPENDIX B

Equivalent Length of Multiple Duct System

The following method was used in calculating the equivalent length of multiple duct systems, R-3, R-4, and R-5, shown in Figs. 4 and 5. The calculations for R-3, the dimensions of which are shown in Table 17, are given as an example. The Fanning formula for frictional head loss in a pipe carrying a fluid is:

$$h_f = \left(\frac{4f}{2g}\right)\frac{LV^2}{D} = C \times \frac{LV^2}{D} \qquad (1)$$

in which,

h_f = frictional loss of head, in feet of fluid flowing

f = friction coefficient

g = 32.2 feet per second^2

C = constant

L = length of pipe, in feet

V = velocity, in feet per second

D = diameter of pipe, in feet.

All three ducts were connected to the casing and were subject to the same atmospheric pressure at the return grilles and to the same sub-atmospheric pressure at the connection of the return-air shoe at the furnace casing.

Hence, the frictional head loss in each duct was the same, and from Equation (1)

$$h_f = \frac{cL_1Q_1^2}{D_1A_1^2} = \frac{cL_2Q_2^2}{D_2A_2^2} = \frac{cL_3Q_3^2}{D_3A_3^2} \qquad (2)$$

in which,

A = area, in sq. ft., and

Q = air volume, in cu. ft. per second, = VA.

If the three connected ducts are imagined to be

TABLE 17
DIMENSIONS OF RETURN DUCT SYSTEM R-3

	West	South	East
	1	2	3
Area, A	314 sq. in.	314 sq. in.	226 sq. in.
Diameter, D	20 in.	20 in.	20 in.
Equivalent length, L	30 ft.	49 ft.	31 ft.

replaced by a single duct connected at the same point, having an equivalent length, L, and passing the total quantity of air, Q, then

$$Q_1 + Q_2 + Q_3 = Q \qquad (3)$$

and

$$h_f = \frac{CLQ^2}{DA^2} \qquad (4)$$

combining Equations (2) and (4),

$$\frac{L_1Q_1^2}{D_1A_1^2} = \frac{L_2Q_2^2}{D_2A_2^2} = \frac{L_3Q_3^2}{D_3A_3^2} = \frac{LQ^2}{DA^2}. \qquad (5)$$

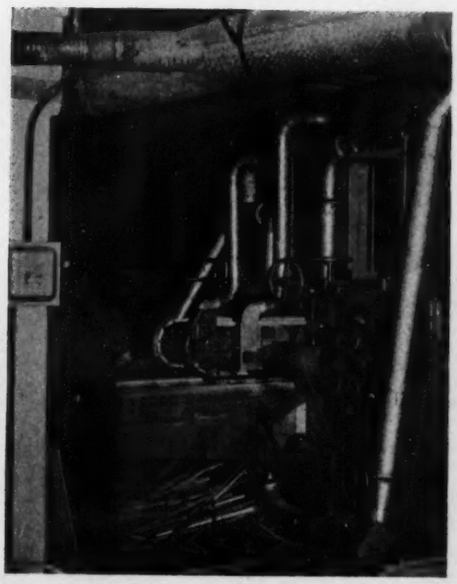
Substituting numerical values for D and A as applying to the case of duct system R-3, Equation (5) simplifies to the form

$$3.78Q_1^2 = 6.18Q_2^2 = 8.89Q_3^2 = \frac{L(Q_1+Q_2+Q_3)^2}{(0.785)^2D^5}. \qquad (6)$$

Solving simultaneously the several equations in-

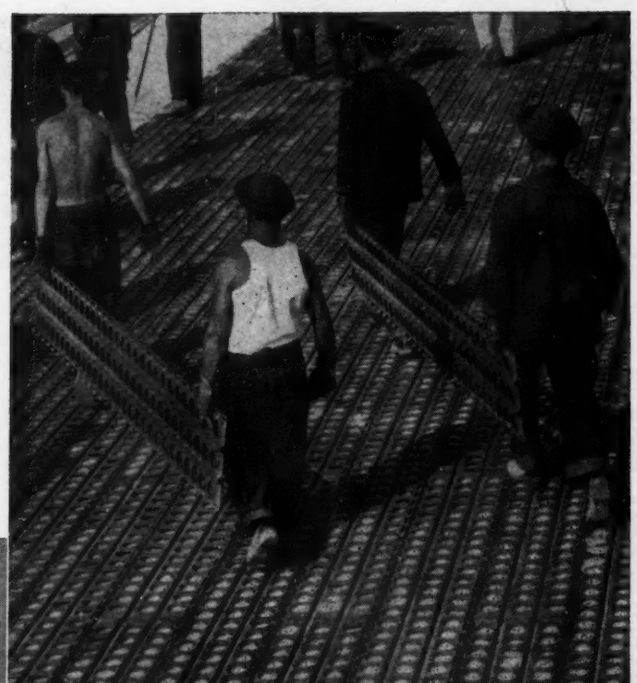
(*Continued on page 72*)

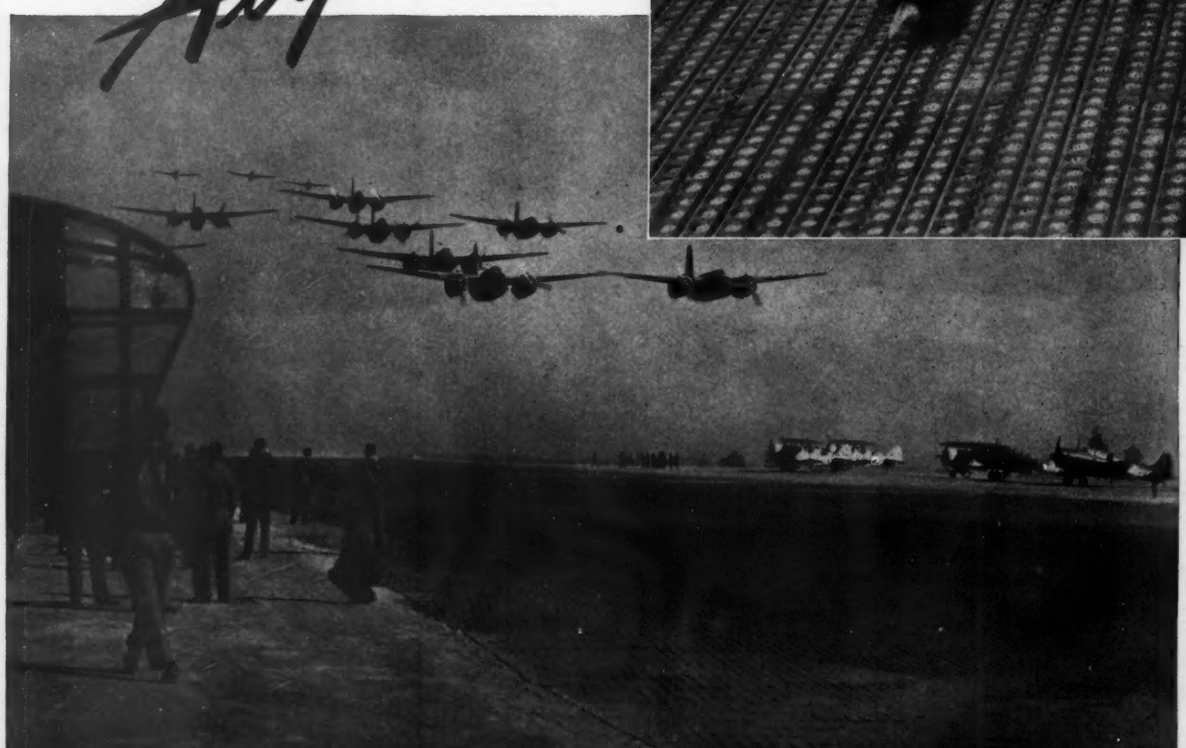
SHEET METAL SECTION



DEVOTED TO SHEET METAL CONTRACTING AND FABRICATING

Springboard for Airpower





Just strips of steel 18 inches wide by 10 feet long, punched full of holes and made so that when you lay them down side by side, they lock together.

But assemble some thousands of these strips and you have a potent weapon—a military runway. Runways made in this way are serving as springboards from which Flying Fortresses, Grumman Wildcats and A-20-A's are being launched against the Japanese north of Guadalcanal, and against the Nazis in North Africa.

Bethlehem's main job in the landing mat program is supplying a tremendous tonnage of sheet steel to many fabricators for processing into these mats. Monthly production has been growing fast, and has already reached a figure that might mean something to an enemy ad-reader, so we can't quote. But when you realize that just one military runway eats up 3,000,000 pounds of sheet steel, you get an idea of the magnitude of the program. Supplying steel for landing mats is only one of the many ways in which Bethlehem is working to aid our armed forces.

Due to the great need for landing mats in a hurry, Bethlehem Steel Company has converted a portion of its building specialty department to the production of these mats for the duration of the emergency.

BETHLEHEM STEEL

More Machines on the Same Fan and Motor

Frequently, today, the blow pipe contractor is asked to add more machines to an existing collecting system and to use the same fan and motor if possible. To do this means a careful analysis of the characteristics of the fan and motor and knowledge of how the duct work must be altered to maintain existing resistance characteristics. The step-by-step procedure is described here.

By H. R. Phelps
American Blower Corporation

INCREASED plant capacity, despite the urgent conservation of materials, demands careful study of any contemplated change in plant equipment to insure that all practical possibilities are thoroughly investigated to salvage present materials.

As an example, a wood waste collecting system for planers, saws, routers, etc., exists, as shown in Fig. I. It is necessary to expand the system to include four more additional machines, and use the present fan and motor if possible. The velocity in the branch lines is approximately 4500 ft./minute and in the main pipe is 3800 ft./minute. The entire system handles 4000 CFM at 6½ inches static pressure with a fan speed of 1300 RPM and 7.0 B.H.P., and uses a 10 H.P. motor.

The additional four machines each require a 4-inch diameter branch line with 4500 ft./minute air velocity, which corresponds to an air volume of 400 CFM in each new branch pipe, or 1600 CFM total additional load on the system. Obviously, there are any number of places in the system where these additional branches can be physically connected, but the designer has to determine what arrangement will best suit the location of the new machines and what effect it will have on the entire system.

Standard open type motors are suitable for continuous operation at ratings up to 15% overload, so that the 10 H.P. motor in this case can be run at 11.5 H.P. load as a maximum. Totally enclosed motors are usually limited to 10% overload continuous service. In any event, one should check the motor nameplate to insure what limitations the manufacturer has actually put on any motor in question.

Friction Problems

Included herewith for proper study is a calculation of the static pressure of the present system. It is necessary to figure only the friction for the greatest run of pipe, plus the entrance loss at the beginning of the system, which is the 6-inch branch pipe, A or K. Elbows of 90° offer a resistance equal to 10 pipe diameters additional length. These values can all be checked by reference to standard friction charts for air flow, such as contained in the A. S. H. & V. E. Guide.

It is also desirable to have a capacity table or performance chart of the installed fan so, for convenience, a fan performance chart is included herewith for the fan under discussion. The system line "A" is the performance line for the installed duct work to which the fan is connected. The system resistance has been calculated at 6.5-inch static pressure when passing 4000 CFM and it is an established law that the friction of a duct system will vary as the square of the CFM ratio. For instance, to pass 5600 CFM through this same duct system means that the static pres-

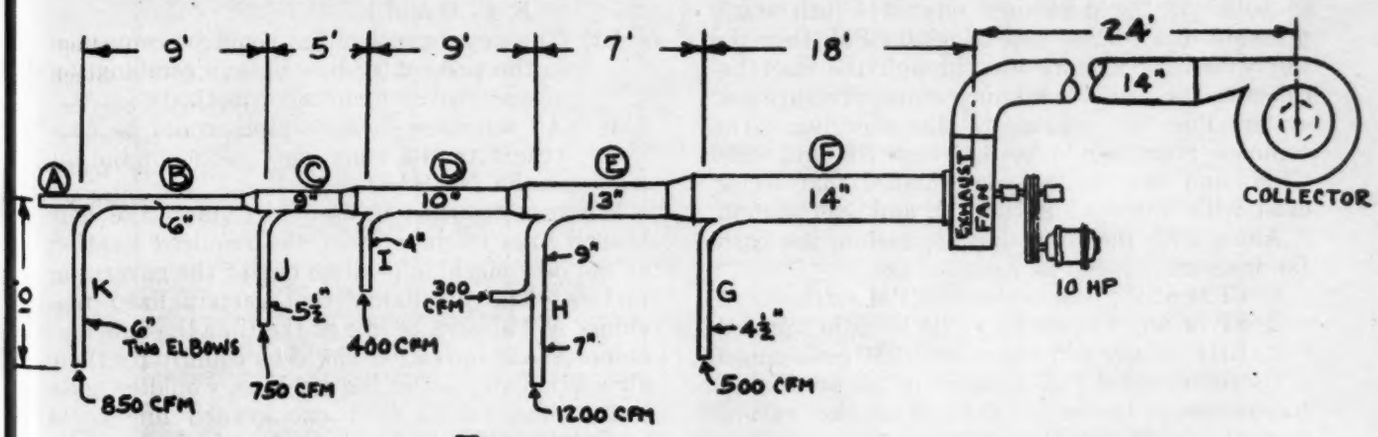
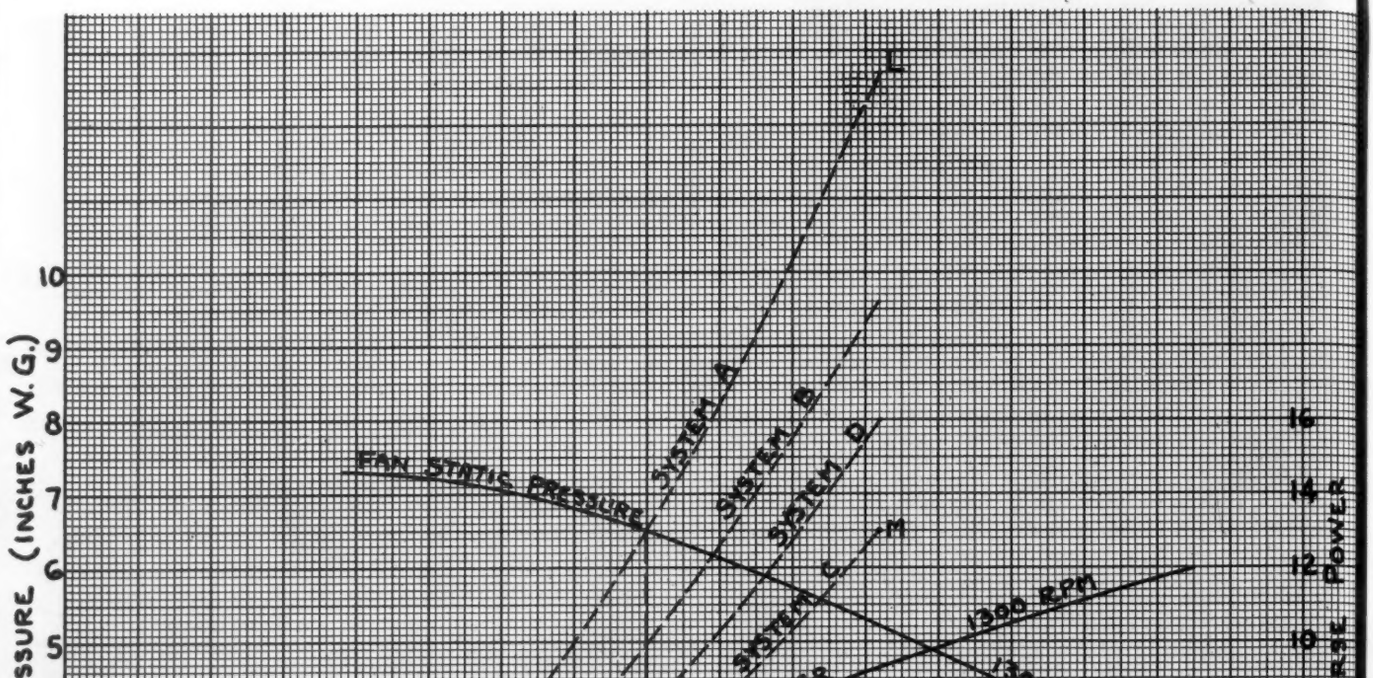


FIG. 1



Performance chart for fan under discussion showing various possible performance characteristics for possible changes in duct layout as described in text.

sure of this larger duct system would then be $(5600 \div 4000)^2 \times 6.5$ inches, or 12.7-inch SP, represented by point "L," and all points on this system line have been established in this manner.

The fan will always operate at the point where the fan static pressure curve crosses the duct system curve because both the fan and the duct have to be satisfied and this is the only point common to both. If the duct only offered 5-inch static pressure to a volume flow of 4000 CFM, then the fan would force more air through the duct because it has available 6.5-inch static pressure and system line "B" represents this condition. The common point would be 6.15-inch SP and 4450 CFM, and that is the performance that would exist with this combination fan and duct system.

Along with the foregoing discussion, the basic fan laws that should be recorded are:

1. CFM of any fan varies as RPM ratio.
2. SP of any fan varies as RPM ratio squared.
3. BHP of any fan varies as RPM ratio cubed.

By reference to Fig. 1, showing the present exhaust system prior to expansion, the various methods of adding the additional machines can be considered as:

(a) The four new machines could be connected by their respective branch pipes to the end of the system at A.

(b) They could be connected, each new branch to one of the present branch pipes, such as G, H, I and J.

(c) They could be connected, each new branch to the main duct at various sections, such as B, C, D and E.

(d) The new branch pipes could be connected to the present system by any combination of the above enumerated methods.

(e) All four new branch pipes could be connected to the main duct section adjacent to the fan inlet.

Whatever method is used to connect the new branch lines to the system, the required location of the new machines will be one of the governing factors. The possibility that certain fixed machines will always be idle at the time the new machines are in operation and thus could have their air suction shut off at the machine, would be quite some influence, as then one branch line could serve two machines, only one of which would be in operation at one time on this branch line.

However, this would be an unlikely and special condition and this article will consider that all machines must be capable of operating at one time.

One recognized fact is worth mentioning at this point for record purposes as it can be the source of unsatisfactory operation of a system. When a system is designed to handle a fixed number of machines and has been sized to handle the necessary air volumes at proper conveying velocities, the operation of this system with some of the branch pipes shut off will result in a lesser volume flow through the main duct line and consequently lower air velocity to the extent that the main line with this lower duct velocity can no longer convey the material and the system will clog up.

Method (a)

For a quick study of applying method (a) for the system expansion, the use of the basic fan laws previously mentioned will serve as a close approximation of the effects on the final system. These basic fan laws apply when no change is made in the actual duct system, and a larger volume or a smaller volume is caused to flow through this unchanged system by either increasing or decreasing the fan speed. Actually this is not exactly the situation in method (a), and from an academic standpoint the static pressure of the revised system would be recalculated on the basis of the new system layout and volume of air flow. For practical study for this method (a), one can treat the system as unchanged and merely handling the increased volume.

On the above basis, this system has to pass 5600 CFM instead of 4000 CFM and thus its system resistance will climb up the system line "A" to the point "L" on the performance chart as previously calculated at 12.7-inch SP for this volume. The fan will have to be speeded up to raise its static pressure line up to this point by fan law No. 1, which gives $(5600 \div 4000) \times 1300$ RPM, or 1820 RPM, and the fan BHP by fan law No. 3 becomes $(1820 \div 1300)^3 \times 7.0$ BHP, or 19.2 BHP.

From this study it is seen that this procedure will result in very high duct velocities, needless HP, and require a larger motor. Enlargement of the main duct sections and a larger collector will reduce the system resistance, and this would be the next step. Thus system curve "C" would represent the larger duct and collector for 5600 CFM at 6½-inch SP and the common point with the fan SP curve is a 5200 CFM, 8.8 BHP. Fan speed would have to be increased by fan law No. 1 $(5600 \div 5200) \times 1300$ RPM equals 1400 RPM to raise the fan SP curve up to the 5600 CFM point "M." The fan BHP would be $(1400 \div 1300)^3 \times 8.8$, or 10.9 BHP by fan law No. 3.

Method (b)

Method (b) would entail a recalculation of the static pressure of the revised system, but roughly would result in a system resistance of around 10-inch static pressure with the final volume of 5600 CFM, and no enlargement of the main duct line. This is practically system "B" and the common point to both fan and duct is 4450 CFM and 7.6 BHP, thus the fan speed must be increased $(5600 \div 4450) \times 1300$ RPM, or to 1630 RPM. The fan BHP at this increased speed will be $(1630 \div 1300)^3 \times 7.6$ BHP, or 15.2 BHP.

This method would likewise require enlargement of the main duct line and the collector to reduce the static pressure to a lower value, say, 6½-inch static pressure with 5600 CFM, and pre-

(*Continued on page* 78)

STATIC PRESSURE TABULATION FOR SYSTEM

PART OF SYS.	CFM	DUCT VEL. FT/MIN	DUCT DIAM	LENGTH DUCT SECTION	ADD FOR ELBOWS	TOTAL EQUIV. LENGTH	STATIC PRESS. PER 100'	S.P. OF SECTION	
K	850	4500	6"	10'	2 ELB. 10'	20'	6.5"	1.3"	
ENTRANCE LOSS = $1\frac{1}{2} \times VP = 1\frac{1}{2} \times \left(\frac{4500}{4000}\right)^2 =$								1.9"	
B	850	4500	6"	9'		9'	6.5"	.59"	
C	1600	3750	9"	5'		5'	2.8"	.14"	
D	2000	3800	10"	9'		9'	2.4"	.22"	
E	3500	3800	13"	7'		7'	1.75"	.13"	
F	4000	3800	14"	18'		18'	1.6"	.29"	
DISCH. MAIN	4000	3800	14"	24'	1 ELB. 11.6'	35.6'	1.6"	.57"	
COLLECTOR SP = $1\frac{1}{2} \times VP = 1\frac{1}{2} \times \left(\frac{3800}{4000}\right)^2 =$								1.36"	
	STATIC PRESSURE OF SYSTEM =							6.50"	

A General Incentives System for Controlling Production and Costs*

By Ernest E. Zideck

THE WAR has deprived industry, large and small, of many seasoned workers and capable and conscientious supervisors, technicians and executives. Production for war has shifted a good many more men to areas that were early to start in such production. Areas that started late, and shops and factories that still are getting under way in producing for war, have to contend with "green" help and personnel, only a few of the old-timers being at hand to make the shop or factory "go."

The old-timers are not too enthusiastic about the "freeze," which prevented them from following the example of the early goers, who landed jobs "higher up and invariably were employed at much higher salaries and wages," *than the men frozen in their jobs were getting.*

The result is that the few remaining good workers, able foremen, engineers and executives are lukewarm in the performance of their duties—the more so when they see the "green" fellow being paid the same hourly rate, or a salary surpassing their own.

As a consequence—and bearing in mind that no one is a wizard, able just to step into a shop or factory or industrial office and do as good as, or better than, the experienced and seasoned men did or are capable of doing—the shops and factories are disorganized, production is lax and far below schedules, there is no effective control, material and tool spoilage is tremendous, *reworking* is the order of the day instead of being the exception, *costs* are undeterminable, the *overhead* is increasing rapidly while the deliveries—the profits—dwindle.

It was exactly the above experience in many a shop and plant during the past year and a half that prompted the author to study the underlying reasons for the breakdown of production. Having been "on the job," and listened to the "old-timer" in the shops and on the production line, to the foremen, the supervisory, technical and office personnel, he has found the *reasons:*

1. The seasoned mechanic and production worker is being paid the same (or nearly the same) hourly rate that the newlings and the inefficient are getting. He does his "patriotic" share of work—*but he hates to do all the good work all by himself*—aiding the lax, the lazy, the learner and the inefficient or incompetent getting his "union" wages.

2. The foreman and the general supervisor is sour because he has to contend with inefficient or incompetent help; and is ridden by a greenhorn from "up there" who knows little about the shops and what it takes to make production *flow.* In addition, and mainly, he is sour because the rising costs of living have been far ahead of his "frozen" pay. And he sees no chance of realizing anything on his wide experience and proven ability to make things go.

3. The technician, the office man and the executive "contact" man—all are bewildered at the disorder and the blunders prevailing, without being able to do anything about it. In other respects they, like the foreman and the supervisor, greatly distrust the "freeze," and complain about *where to get the money to pay their income tax.*

It has become obvious that, although the wage and job "freeze" was probably necessary to curb higher wage demands by the rank and file and prevent labor quitting and migrating, the freeze is not just or expedient as concerns the first-rate mechanic, highly skilled specialist, the efficient group worker, the capable and seasoned technician, supervisor and office man.

Because, if not from a sense of justice, then *expediency* would dictate that, for the good of the employer and his shop or factory (and his pocketbook), *these key men* be kept satisfied and given a chance, by one device or other, to get ahead and earn each according to his skill or knowledge and willingness to do it.

Many employers are recognizing the need for a workers' wage and key men's incentives, and are trying out one or the other of the dozens of schemes elaborated in the past. But the only such *Plan* that really will work must be based on "take and give," and in an industry overloaded with *indirect* costs, as is the case in almost any shop or factory producing for war, such costs must be analyzed, reduced to a minimum, and the *savings* be made an incentive for the key men to *earn more* and show their *merit* for eventual promotion.

The employer, owner, president or management are chiefly concerned with *adequate and orderly production at a profit-allowing cost.* Orderly, timely and accelerated production at no extra cost to them is what they want. If such production can be accomplished, then they should try to get it. Such a production, *now,* promises a survival in the coming post-war era. And, by the way, only such a production will survive!

In the accompanying chart and text the author submits a far-reaching, *practical* device for such a production.

*Copyright, 1943, by Ernest E. Zideck

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Ernest E

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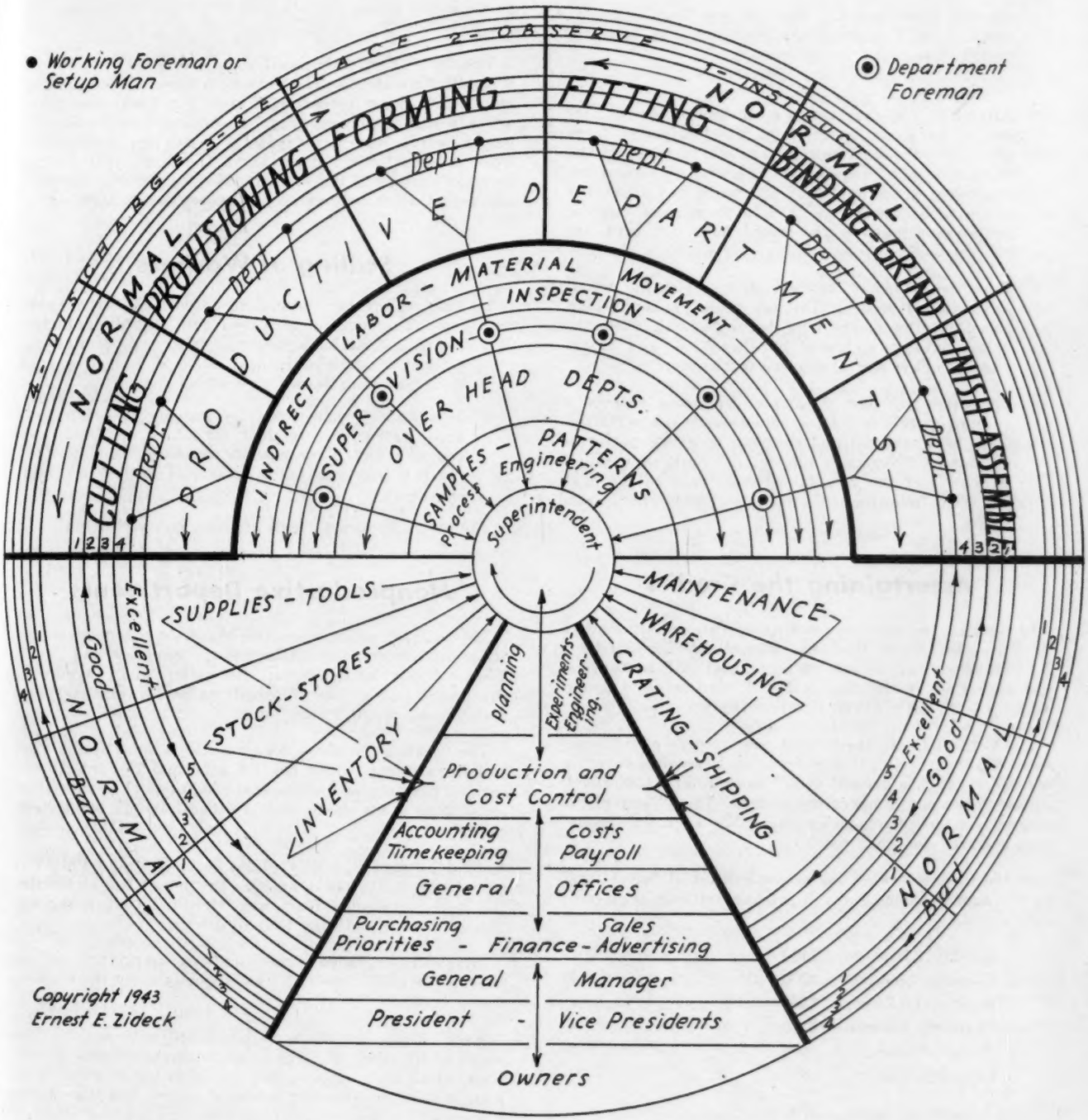

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Procedure for Applying Chart

1—Transfer the essentials of the chart to an ample size board (like a blackboard) and have duplicates made, one to be hung near each Time Clock. (Adjust Departments, Groups, etc., to suit your own plant.)

2—Ascertain from past Production Records (or by time study compared with production records) a "Normal" for each individual or Group performance, output per hour, etc., and compute Normal output per week (or pay period).

3—Enter such weekly "Normal" into the space so marked on the Chart, each specific operation or task or performance in its proper place within the ring reserved for "Normal," but do not use the space relating to other than Production.

4—Weekly production not exceeding 5% plus or minus the "Normal" established, is entered in the "Normal" space.

5—Production in any one individual's output, or Group output, below "Normal" is entered in the outer ring, and production higher than "Normal" is entered in the inner, so marked ring.

6—Both the outer and the inner rings are divided into 4 scales; the markings in these rings conform to

degrees of either the "low" or the "high" production. The 4 scales in the ring each may be interpreted in per cent, as follows:
1 = 25%; 2 = 50%; 3 = 75%; and 4 = 100%

7—After 2 or 3 weeks' entries on the board (do not forget to have one hung where the Production force may read the entries), a possible revision of the "Normal" will be indicated. (Up to this time the employees know only that the board has something to do with a bonus being paid them soon, but the actual markings on the board have not been explained to them.)

8—With the "Normal" brought in line with the actual production results of the 2-3 weeks, a bonus plan based on the Chart may be negotiated with the union, have it approved by the Wage and Hours Federal office, and announced to the men.

9—The extra-pay plan is simple: the wage cost of a specific operation, task or performance is ascertained from past records; and the man or group performing above "Normal" during the week is credited with 80% of the ascertained cost, paid on the next pay day following the week in which credit was given.

Ascertaining the Credits

In the first Department (cutting operations) the Shears No. 1 are operated by the shearsman, A, and his assistant, B. The hourly rate of A is 90 cents, that of B is 60 cents. The operation of the Shears No. 1, during an 8 hours' working shift, costs $12.60 in direct labor wages.

The Control Dept. has studied *past records* of performance on Shears No. 1, and from such records covering several weeks, has arrived at a "Normal" of 1.150 miscellaneous cuts per 8 operating hours. This "Normal" is entered, on the Chart, under Shear No. 1, in the "inner" ring reserved for "Normal."

In the week following the announcement of "incentives" by the management, A and B produce (strictly inspected) cuts as follows:

Monday, 8 hours,	1400
Tuesday, 7 hours,	1200
Wednesday, 8 hours,	1300
Thursday, 8 hours,	1100
Friday, 6 hours,	900
Saturday, 5 hours,	800
Total per week:	6700 cuts
The "Normal" established	= 5937 cuts ($0.10956 per cut)
Credit	+ 763 cuts = ($7.70)

This "credit" is entered on the chart as soon as computed, for A and B to compare with their own figures, if any, but chiefly to spur on the workers to *surpass* the performance.

The "Normal" is established by the Control Department for other shears, cutters, saws, blanking presses, etc., in the Cutting Department, and so for the machines and operations in the Provisioning, Forming, Welding, Finishing and other productive departments.

A and B Are Paid

Regular hourly rates at shears, 42 hrs. Regular hourly rates at other work, 6 hrs. (Overtime?) "Credit" A = 3 parts, B = 2 parts (of 80%) of $7.70. What happens to the 20% left?

This 20% from each credit earned in Dept. 1, Cutting, is equally "credited" to the working foreman, leader, set-up man and working instructor, if any. The fewer men there are in a supervising capacity but consistent with adequate gauge set-up, operation inspection and the keeping of work records for the department, the larger will be the foremen's share of the credits. Obviously, these foremen are paid their hourly rates like the other workers.

Scaling of Workers

1—This scaling has nothing to do with the extra earnings. The operator in scale 1 gets his full credit like the skilled mechanic does who is in scale 4. But if a worker is persistently near 4, he is gauged a good man for either leader or working instructor.

2—Men whose production is persistently below normal need instruction. If their output is vacillating between 2 and 3, they need watching. And if they reach 4, they may just as well be transferred or discharged.

The above applies to each of the six departments.

Nonproductive Departments

The scaling, as seen on the chart, is extended to six other departments or subdivisions: Supplies and Small Tools; Stock and Stores; Receiving and Inventory; Crating-Shipping; the finished goods Warehouse, and Maintenance Plant Protection.

The "scaling" in these departments is done by the Control Department, which has set a normal for orderliness, service, promptness and general conditions of keeping records, eliminating waste, and in other respects being "efficient."

"Bad," scaled 1, 2, 3, 4 (25%, 50%, 75% and 100%) is so entered on the chart weekly. Persistent bad eliminates the men responsible from any "credits" (which are explained later), and may lead to discharge.

"Excellent," graded same as above, marks the men in charge for good "credits" and if persistently near 100%, for promotion.

Each of the departments concerned with serving the shops or the plant at large keeps accurate records of supplies, small tools, repairs, etc., etc., showing to which foreman or chief delivered or rendered. Stock and store items are issued on requisitions from Planning-Control solely.

Credits for Department Heads

These credits are determined, first, by the volume of production increase and product quality in relation to savings in plant, power, light, etc., use; elimination of reworking; and indirect labor and costs reduction; and, second, by savings effected in supplies, tools, machine repair or replacement, material spoilage and waste elimination, and general greater efficiency of the personnel in the technical section and the offices.

Shop Supervision, Product Inspection, Process Engineering, the Superintendent and the Control Department are entitled to credits accruing from production itself.

The other departments and the Superintendent and the Control are entitled to credits because of and determined by savings, as pointed out above under 2.

How Costs Are Reduced

Studies in a middle-sized manufacturing plant doing sub-contract war work have disclosed:

1—*Manufacturing:*

Supervision Inspection Handling Cleaning Watch Miscellaneous	Cost Ratio 12.75

2—*Maintenance:*

Building Repair Machinery Tool Repair Miscellaneous	Cost Ratio 9.25

3—*Supplies:*

Small Tools Lubricants Abrasives Stationery Waste and Rags Solvents Fuel Power Light Water Miscellaneous	Cost Ratio 14.90* TOTAL: 36.90

**Excessive ratio.*

4—Miscellaneous other Service and running Expense pertaining to manufacturing alone (not to Administration and the securing of the contracts) brought the Total Cost Ratio to.....45.10

The above *Costs* are *exclusive* of the costs of materials going into the product. Nor do they include *productive* wages.

It is seen at a glance that the above costs are *uncontrolled,* and far in excess of what they would be if, and when, an effective control is exercised over them.

1—*Indirect Labor* in manufacturing should be about 10.00, instead of 12.75.

2—*Maintenance* should be 7.00, instead of 9.25.

3—*Supplies* call for a ratio of 8.00, instead of 14.90.

4—And *Service* may be well brought down to 8.00, instead of current 9.60.

A saving of a ratio of 11.90 is here indicated. The *control* extended into the other departments, technical, clerical, and into the administration itself could increase the saving to amount to a ratio of at least 15.00.

These savings would be ample to provide for whatever "credits" be due the deserving key men, technician and office man.

Review

By an effective use of the chart presented here the manufacturer accomplishes *in production itself:*

(a) Increased production without extra cost to him.

(b) Satisfied and cooperating productive workers.

(c) Orderly shop conditions, a minimum of material spoilage and rework.

(d) Control over production flow and scheduling.

(e) Deliveries of quality product on time.

In the plant at large:

(a) Orderliness and efficiency in the "service" departments.

(b) Savings in indirect labor costs, maintenance, supplies and servicing expense up to a ratio of 15.00.

(c) By using a portion of the savings for "credits" to the key men and personnel meriting them, he will allay the unrest among them, banish their indifference and secure their cooperation "for the good of the plant."

(d) Both the productive worker and the supervisory and other personnel having an incentive (in extra earnings) to do their best, they both will take hold of the learner, the unskilled and the uninitiated (who now largely man the shop and the factory) and make these men efficient, too.

Conclusion

The chart and the preceding text is presented here for what it may be worth to the owner of an establishment suffering from ills of underproduction, confusion and high and mounting costs.

The chart and the text simply show "the how" of satisfactory production, orderliness and the lowering of costs.

The plan is acceptable to union labor. It is worked out to meet the approval of the federal authorities governing wages and salaries. It can be easily adapted to any size shop or manufacturing plant engaged in quantity production, with *changes* in the set-up or procedure, the normal, the credits and other essentials disclosed as may best suit conditions and satisfy both the employee and the employer.

Reconstruction In Lead Alloy Sheet

IN East Liverpool, Ohio's Riverview Cemetery, the Grand Army of the Republic's Memorial Chapel has for many years been one of the city's structures of historical significance.

As originally constructed, the massive stone walls supported a pyramidal, stepped stone roof, with the central section surmounted by a stone, columned cupola topped with a copper statue.

In 1941 it was decided that a new roof was required by the owners, the Riverview Cemetery. The architect (Charles F. Owsley, Youngstown, was given the problem of reroofing and modernizing the interior of this structure without losing its hisotrical appearance or significance. The general contracotr (The Potters Lumber Company); and the sheet metal contractor (J. M. Batey Company,

Portico gutter and eave showing batten caps, gutter contour and pre-tinned, sweat-soldered gutter joints. Expansion joints were provided at ends of these gutters.

Pan sheets on portico are 20 inches wide between battens and 48 inches long. Horizontal seams are loose, single-locked, mastic-filled. Pan sheets cleated at 10-inch intervals.

East Liverpool), were given the job of carrying out this reconstruction due to their great knowledge of this type of quality work.

A most important consideration was to provide the building with a monumental, water-proof roof which would withstand the corrosive, sulphuric acid atmosphere of East Liverpool, but which would not detract from the antique appearance of the building.

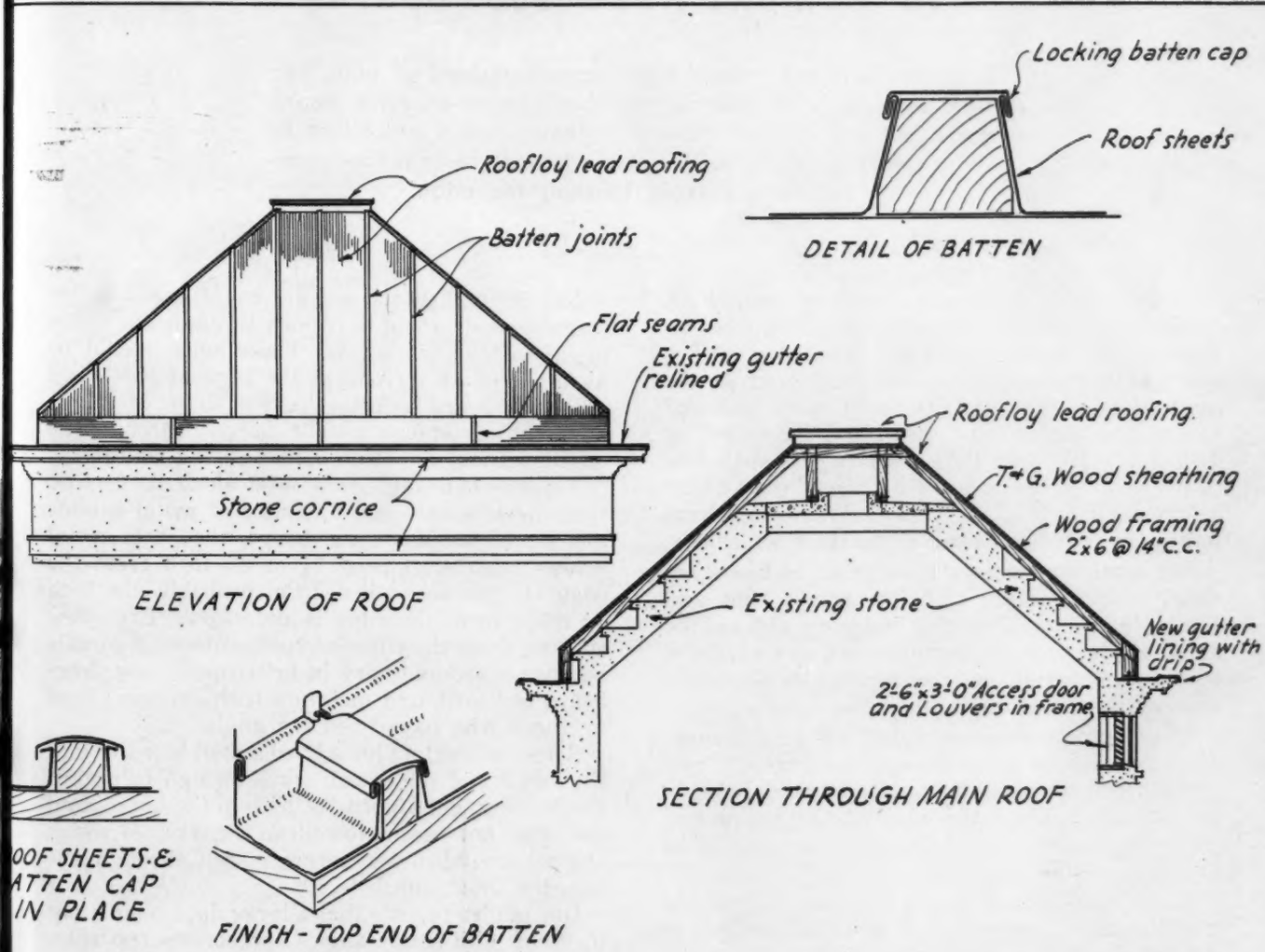
The completed roof is shown in a photograph. The reconstruction of the roof and the details of application are shown in the drawings.

The columned stone cupola and statue were removed and the stepped stone roofs were covered with wood framing and sheathing. Approximately 7,000 pounds of 2 pound per square foot. Revere Roofloy lead alloy sheet was used for the batten roof, and 1,000 pounds of Revere "Leadtex 25" lead coated copper made up the built-in gutters.

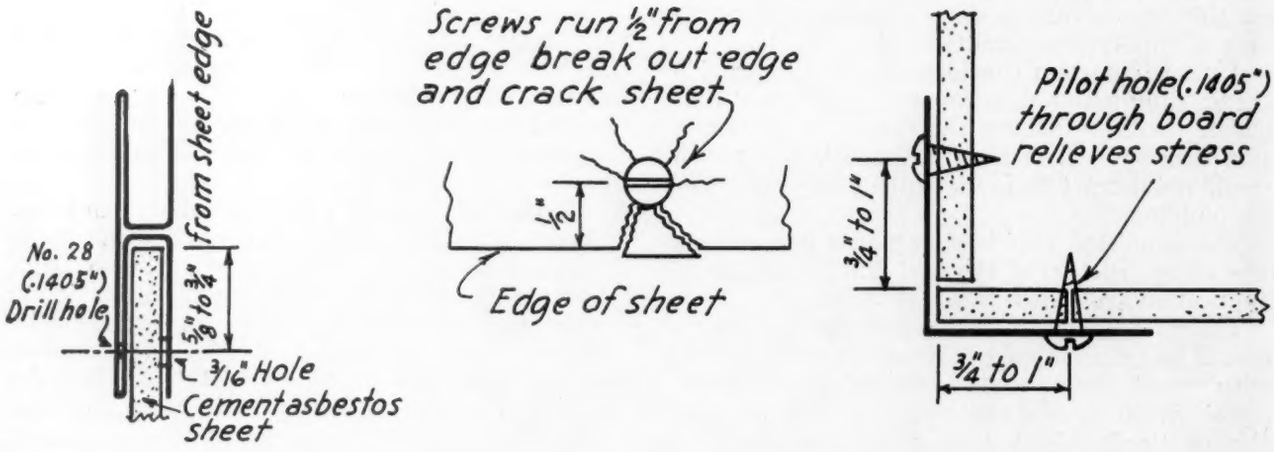
The center roof section was covered with Roofloy sheets fabricated into a batten seam roof. Wood battens 2¼ by 2½ inches rectangular in section were spaced approximately 26 inches on centers. Pan sheets between battens were 48 inches in length employing large, mastic-filled, single lock transverse, staggered seams to provide for ample expansion and contraction. Sides of sheets were cleated to the batten sides with copper cleats spaced approximately 10 inches on centers, and separate batten caps were folded into the sides of the main sheets.

The built-in gutters were fabricated from 16 oz. "Leadtex 25," lead-coated copper to provide ample column strength for conveying expansion and contraction movement to the gutter expansion joints which were placed in the center of each side. The gutters were installed to facilitate this movement, and the expansion joints were fabricated to make a complete separation of the gutter sections. Gutter joints, as on all quality work, were cleaned, pre-timed, and sweat soldered.

The wing roof sections were also of batten seam construction using smaller battens and 20 by 48 inches by 2 pound per square foot Roofloy sheets. These roofs were installed in a manner similar to the center roof section. Built-in gutters were of "Leadtex 25", lead-coated sheet copper.



The old roof was stepped stone, so to provide a metal roof deck, a wood framing was built over the stone as shown in the section and sheathed. Then the new battens and roof were laid to form a smooth, flat roof. Finished appearance is shown in the photograph facing. "Roofloy's" lead color gave the desired monumental and antique appearance; "Roofloy's" corrosion resistance protected against East Liverpool's sulphuric atmosphere.



Metal Screws Require Special Procedure In Cement-Asbestos Board

There are situations where metal screws, instead of bolts and nuts, save labor in putting together cement-asbestos board ducts, but screws can't be used without special procedure to avoid splitting out the edges of the board. Here is how some contractors avoid splitting the edge.

IN the articles published in AMERICAN ARTISAN describing the methods of putting together large ducts using 3/16, ¼-inch or thicker cement-asbestos board in metal locking strips, the contractors have placed the board in the lock and run a drill through the metal and the board or drilled the holes in the metal in the shop and then drilled the corresponding holes in the board after the board is in the metal lock and have joined the board and the lock together with bolts.

But some contractors have tried to use sheet metal screws instead of bolts to save time and eliminate one man on the inside to put on the nuts. Or in certain junctions—as, for example, where two section ends come together—screws eliminate the man on the inside.

These experiments have not all been happy. The contractors have found that screws run through the board without any previous holes in the board, split out the edge of the board and crack the board around the screw somewhat as shown in the sketch.

Experience of contractors seems to indicate that the use of screws in place of bolts requires certain changes in the construction.

First, the screws should be at least 5/8ths of an inch and preferably ¾ of an inch from the edge of the board.

Secondly, it is best to drill a hole with at least a No. 28 drill in the outside metal and a corresponding hole about 3/16-inch through the inside metal to take the screw. These holes should be about ¾ of an inch from the edge of the board when the board is in the locking strip. If this is done the screw can usually be put through the board without any hole drilled in the board.

Third, when angles are used along corners so that there is only one thickness of metal outside and no metal inside the board, the sheet metal screw must be at least ¾ of an inch from the edge. If the board is brittle, probably one inch or more from the edge is necessary. Even this spacing from the edge is reported to be a gamble because boards do vary in brittleness, even from board to board, and metal on both sides is urged by those who have tried the angle.

Some contractors have tried a pilot hole through the metal and the board, small enough to permit the screw to get a good "bite" into the board, and the small hole seems to relieve the stresses which are set up when the screw is run through the board without any hole.

One reader reports that a large duct sample put together with single angles and screws (no holes drilled) and the screws too close to the edge was tested by the inspector by pushing away and down with his foot on a top edge and the screws pulled out, letting the duct collapse. Double metal and screws were then specified.

"NONE BUT THE BEST has been our standard for nearly 100 years . . .

. . . That's why we use PARKER-KALON Quality-Controlled Sheet Metal Screws!"

Says John E. Nicholson, Jr., of NICHOLSON & GALLOWAY, Roofing Contractors, New York

For almost 100 years, Nicholson & Galloway have been roofing famous structures according to the founder's policies. Precept No. 1 requires – "None but the best materials."

One of the most recent jobs handled by this fine old company was the reconstruction of all hollow metal window frames and spandrel panels on the twelve floors of the Candler Building – New York City landmark. Parker-Kalon Sheet Metal Screws helped to save many hours of labor – helped to show greater profit – gave the building owners added insurance of permanency.

Nicholson & Galloway, like many others in the sheet metal field, know that every P-K Screw will work right and stay in tight . . . that "doubtful screws" – screws that look all right but some of which fail to work right – have been eliminated by Parker-Kalon's Quality Control routine. Parker-Kalon Corp., 190-192 Varick Street, New York, N. Y.

TYPES FOR EVERY METAL FASTENING JOB

Fastenings in the reconstruction of window frames and spandrel panels in famous old Candler Bldg., New York City, were made with P-K Type "A" Sheet Metal Screws.

PARKER-KALON

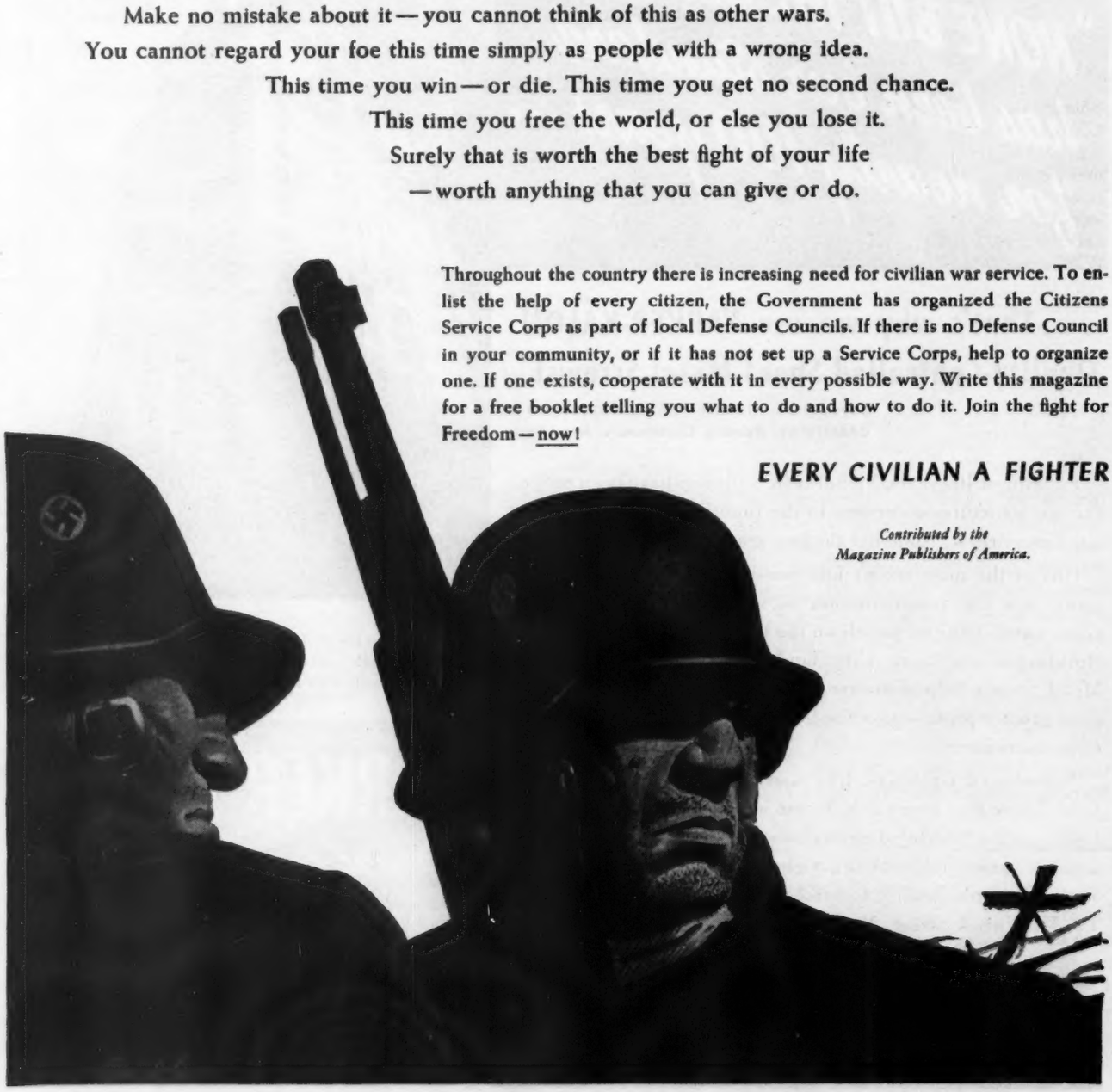
Quality-Controlled

SHEET METAL SCREWS

Give the Green Light • to War Assemblies

If they win ...only our dead are free

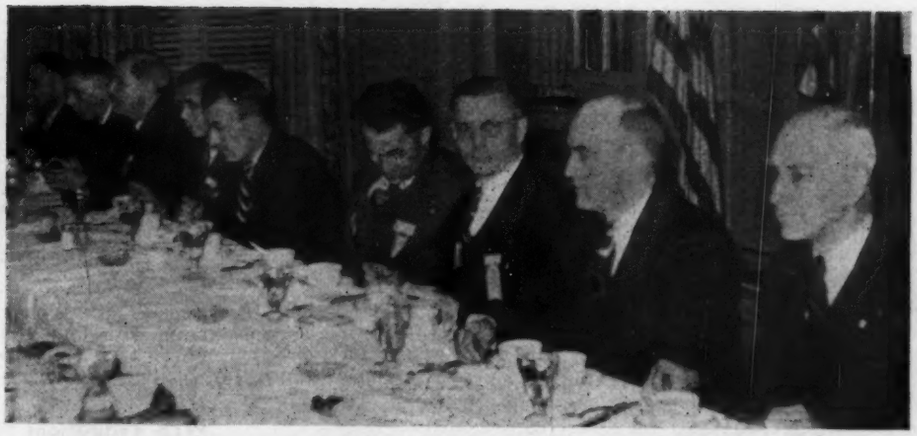
These are our enemies.
They have only one idea—to kill, and kill, and kill, until they conquer the world.
Then, by the whip, the sword and the gallows, they will rule.
No longer will you be free to speak or write your thoughts, to worship God in your own way.
Only our dead will be free. Only the host who will fall before the enemy will know peace.
Civilization will be set back a thousand years.
Make no mistake about it—you cannot think of this as other wars.
You cannot regard your foe this time simply as people with a wrong idea.
This time you win—or die. This time you get no second chance.
This time you free the world, or else you lose it.
Surely that is worth the best fight of your life
—worth anything that you can give or do.



Throughout the country there is increasing need for civilian war service. To enlist the help of every citizen, the Government has organized the Citizens Service Corps as part of local Defense Councils. If there is no Defense Council in your community, or if it has not set up a Service Corps, help to organize one. If one exists, cooperate with it in every possible way. Write this magazine for a free booklet telling you what to do and how to do it. Join the fight for Freedom—now!

EVERY CIVILIAN A FIGHTER

Contributed by the Magazine Publishers of America.



Speakers' table left to right—Charles Byron, president, Saginaw local; P. O. Wierenga, treasurer; Jay Biddle, secretary; L. Hendrickson, vice president; Hessel VanderWoude, president-elect; Elmer Shartow, past-president; Sam Hazenberg, president of auxiliary; J. Morrissey, past-president of auxiliary; W. L. Brydges, mayor of Saginaw.

The Michigan Convention

THE 32nd annual convention of the Michigan Sheet Metal Roofing, Heating and Air Conditioning Contractors Association held in Saginaw March 4 and 5 proved that Michigan contractors like conventions—members attended from all parts of the state; even the salesmen turned out in impressive numbers; visitors were in attendance from important Michigan cities; and the Federal Government Agencies like WPB, OPA, WMC, thought so highly of the convention that they sent their best men to explain orders and regulations to the assembly.

Plastics

Paul Jensen of the Dow Chemical Company got the convention off to a good start with a very interesting presentation of samples and discussion of various types of plastic tubing, piping, fittings and miscellaneous items where plastics are replacing metal or other materials. He explained that most people think of plastics in terms of highly colorful materials such as a small radio cabinet, but the large field for plastic is in the more prosaic tubing, piping, fittings, and industrial materials. Most of these industrial plastics, said the speaker, become plastic when the temperature reaches 180 deg. and many plastics become brittle when temperatures drop lower than 15 deg. above zero. Therefore in most applications of plastic piping, tubing and sheets, the material which flows through the plastic or the temperature surrounding the plastic ought not exceed these minimum and maximum limitations.

Mr. Jensen explained some of the various projection molding, extrusion molding, and other methods of forming plastics into tubing, piping and all sorts of shapes. Then he demonstrated how two ends can be heated against a special soldering plate and then pressed together and held together for a few seconds until the plastic hardens. The result is a "welded" joint which is as strong as the adjacent tubing or piping. This type of welding is not ordinarily satisfactory for tubing because the tubing wall is too thin. For tubing, the flanging machine commonly used for copper tubing can be used, but care should be exercised to obtain a good uniform flange. On the piping Mr. Jensen demonstrated that the piping can be threaded and run into fittings with pipe-wrenches just as metal piping is handled. Then the speaker showed various samples of Saran screening of several colors which he said will withstand exposure outdoors and indoors and can be used as a replacement for copper screening. Unfortunately, at the present time all such screening is taken by government agencies.

Maximum Price Regulation 251

The Saginaw District Office of OPA sent representatives Chapman and Logsden to explain Maximum Price Regulation 251. The speakers read excerpts from the original MPR-251 Order and explained various conditions specified in the sections.

Practically all of this discussion is duplicated in AMERICAN ARTISAN's presentation of MPR-251 in the February issue (Page 20) and in the March issue (Page 22), but following are questions answered which may be of interst.

Jobs completed within ten days of awarding a contract can be handled by filing one *final* report where the

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job calls for more than $500 in place of the "Estimate" report and the "Final Cost" report which is requested by the order.

If any user of MPR-251 wishes to appeal for any reason, there is a special form for appeal to be obtained from the local or district office of OPA. This form is self-explanatory so far as filling out is concerned.

Where the customer *buys the material* and hires the contractor to install, thus furnishing labor only, the contract is not covered by MPR-251.

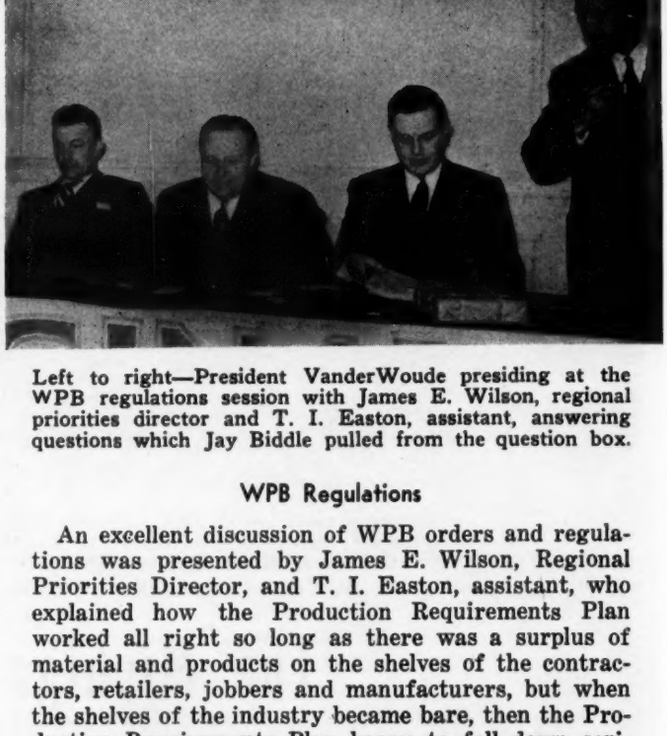
On the various *suggested* forms for reporting jobs exceeding $500, there are sections requesting a dollars and cents figure showing these profits and also the overhead which was included in the contract price. If the contractor has not formerly been accustomed to including all the items of overhead which MPR-251 permits, it is not possible to increase the overhead percentage as compared to the percentage used on March 1, 1942. Therefore, the contractor is apt to lose money, but MPR-251 makes some provision for such an emergency by permitting the contractor to include under "Direct Job Costs" items which were not usually figured in overhead, but which are legitimate items of expense in a contract.

Heating Division Group Meeting

The Michigan association divides its membership for convention study purposes into two groups—one group including all heating men and the other group including the roofers and sheet metal contractors. This last year the heating division has been discussing the advisability of an emblem which contractor members can display on their shop windows showing that the contractor is a member of the Heating Group, and agrees to abide by certain regulations of the Heating Division. At this year's meeting the revised emblem was displayed, but was not unanimously approved because some objection has been raised to including air conditioning as a term on the emblem. It was decided that perhaps the term winter air conditioning would be suitable, so, again, further discussion was placed in the hands of the officers and directors of the group.

The problem of dues was discussed again; some members wanted to increase the dues to have more money to use. Some other members wished to retain low dues in order to attract just as many members as possible. The convention seemed about evenly divided on the subject, so this matter was referred to the directors for a later report.

The Heating Division elected Fred Hossie of Flint as chairman and Charles Byron, of Saginaw, as secretary of the group.



Left to right—President VanderWoude presiding at the WPB regulations session with James E. Wilson, regional priorities director and T. I. Easton, assistant, answering questions which Jay Biddle pulled from the question box.

WPB Regulations

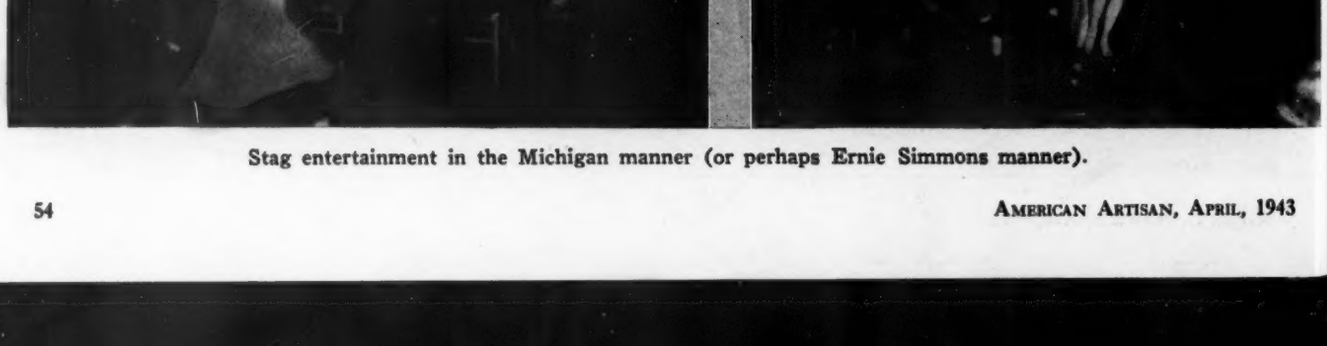
An excellent discussion of WPB orders and regulations was presented by James E. Wilson, Regional Priorities Director, and T. I. Easton, assistant, who explained how the Production Requirements Plan worked all right so long as there was a surplus of material and products on the shelves of the contractors, retailers, jobbers and manufacturers, but when the shelves of the industry became bare, then the Production Requirements Plan began to fall down seriously. Accordingly (this was reported in various issues of the ARTISAN) PRP was superseded by the Controlled Materials Plan which has as its basis an intention to make sure that every final war item will have sufficient raw and fabricated materials for final production before the war item is scheduled. In other words, if the army requires 10,000 tanks, then CMP proposes to make sure that all the material for motors, guns, hulls, armor, even down to small items like bearings for 10,000 tanks, are available or materials for production are available before WPB will authorize the production of 10,000 tanks.

At present only steel, copper and aluminum are allocated under CMP, but any material which proves critical will be placed under allocation.

Mr. Easton and Mr. Wilson also explained decentralization of WPB. WPB in Washington hopes to decentralize operations so that much of the preliminary paper work and as much of the final decision as possible can be decided in the local or district or area of WPB offices. This development has been reported in AMERICAN ARTISAN, especially the March issue.

Both Mr. Wilson and Mr. Easton assured the convention that so far as WPB can determine now, there is available and there will be distributed sufficient materials for all necessary repair, replacement and main-

(*Continued on page* 76)



Stag entertainment in the Michigan manner (or perhaps Ernie Simmons manner).

President-elect Patrick Varden (left) receives the congratulations of retiring president Henry Steinhorst.

The New York Convention

IN the past few years New York's convention usually has been held in one of the up-state, centrally located cities, but this year as a gesture of appreciation to member H. A. Daniel, who has faithfully attended all conventions for many years, the association decided to hold the convention in Mr. Daniel's home town—Newburgh. The convention facilities were excellent, and a very encouraging attendance resulted.

The New York Association started, several years ago, a group insurance compensation plan under the management of Laverack & Haines, and this year, for the first time the managers reported results highly encouraging to the group. While the group compensation fiscal year had not ended at the time of the convention, Mr. Haines of the managing firm reported that income probably will be earned with premiums (as of February 1,) approximately $48,000. It is possible, reported Mr. Haines, that the total annual premium for the past year may reach $75,000 but $70,000 seems quite conservative. The managers estimate that the compensation losses may be approximately $15,000, plus medical expenses of approximately $6,000, making a total expenditure for 11 months of approximately $21,000. This is a loss ratio of about 32 per cent and is the best net loss ratio shown by any group operating under the Laverack & Haines managership.

Mr. Hayes of Laverack & Haines reported on a disturbing factor which is facing insurance groups in New York State, stemming from test cases which are currently before the State Insurance body involving a ruling on whether or not tuberculosis and silicosis are always diseases caused by exposure in industry, or whether an employee is entitled to compensation based on a lowering of the employee's resistance due to working conditions which eventually result in tuberculosis or silicosis.

Mr. Hayes explained that silicosis exposure was added as a compensable disease in 1936 as article 4a to the insurance law, and thereby eliminated suits for compensation as a common law action.

In 1942, however, tuberculosis was advanced as a germ disease which might not be contracted in working conditions, but which might be contracted as a result of lowered resistance brought about by exposure to silicosis conditions. These suits are pending for action and must be defended by all group insurance bodies. Decision will be made known to insurance group bodies as soon as any suit is finally settled.

Sub-Contract Work

The Subcontract Division of War Production Board sent Mr. Davenport to the convention to discuss the problem of small contractors obtaining war work, through the operation of the Smaller War Plants Corporation. Mr. Davenport explained that a report recently compiled in the New York area indicated that sheet metal shops constituted the second largest group not able to obtain war work in the New York area, exceeded in numbers of idle plants only by the needle craft in New York.

Mr. Davenport said that SWPC had finally obtained from the various war procurement agencies a preliminary list of products which can be manufactured in small plants and an assurance from the war procurement agencies that so far as possible something like 75,000,000 to 100,000,000 dollars worth of small war production orders will be distributed in the Eastern part of the country. This program has not yet advanced to the place where it is possible to definitely state how successful the program will be. Meanwhile, suggested the speaker, every plant desiring to obtain war work should file with WPB a facilities record (as reported many times in AMERICAN ARTISIAN) and should ask the local WPB to place the firm on the mailing list to receive WPB news bulletin, which lists the need for particular items.

As an example of how this sub-contracting will be distributed, Mr. Davenport reported that a recent order placed for 25 new experimental planes specifies that everything on the plane, except the engine and the landing gear, must be sub-contracted. The same procedure is now being organized for parts required for Maritime Commission and Navy, both. The Medical Department of the Army has also been asked to break up its contracts for certain types of boxes, con-

tainers, sterilizers, in other words items requiring a light sheet housing so that these housings can be subcontracted.

P-84 Situation

The War Production Board representative announced a number of important changes in orders affecting this industry.

For instance, WPB believes that a certain revision of order P-84 is required and probably will be instituted to permit the manufacture of some additional equipment to be used as replacement.

WPB is beginning to feel that Order P-100 is now rather useless and in most cases should be superceded by the use of CMP Regulation 5, which establishes procedure for obtaining most controlled and non-controlled materials for use as maintenance, repair or operating supplies.

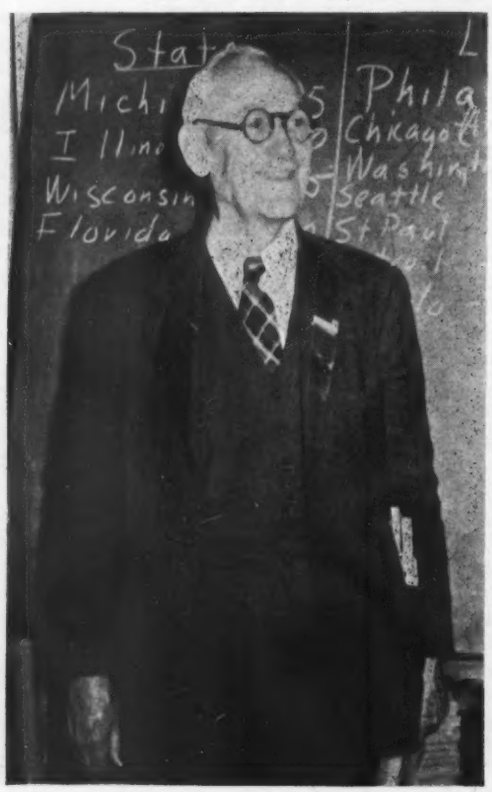
It was explained that under CMP Regulation 5, "maintenance" means the minimum upkeep necessary to continue a facility in sound working condition. "Repair" means the restoration of a facility to sound work conditions, but neither maintenance nor repair is intended to include the improvement of any plant, facility or equipment. CMP-5 also provides for obtaining operating supplies, meaning thereby materials for products normally carried in stock as operating supplies according to established accounting practice, where such materials are not included in the manufacturers' finished product. Operating supplies also include hand tools, and such items.

Any manufacturer, who is engaged in producing any product listed in Schedule 1 or 2 of CMP, obtains delivery after March 31 of any Controlled Material, (except aluminum) for maintenance and repair by placing on his delivery order a simplified certification (discussed in this issue) and the following Preference Ratings are assigned to orders calling for delivery of maintenance and repair supplies after March 31—

1—AA-1 for maintenance or repair of facilities required for producing any products listed in Schedule 1

2—AA-2x for maintenance or repair of facilities required for producing any products listed in Schedule 2

3—A-10 for necessary maintenance or repair of facilities required for producing any product not listed in Schedule 1 or Schedule 2.



H. A. Daniel, Newburgh, host to convention

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Burton Stevens, Rochester
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Charles R. Joyce, Albany
Joseph Lindacker, Utica
J. A. Heaphy, Syracuse

The speakers then explained how deliveries of steel will be conducted after March 31st. Briefly, delivery may be made as follows:

1—Orders in amounts of $10 or less may be filled by the distributor without allotment number of preference rating

2—Orders bearing Preference Ratings of AA-5 or higher for delivery before July 1, may be delivered unless the order calls for more than 40,000 pounds to one person at one time at one destination

3—Orders may be filled calling for delivery of not more than the following amounts of each product classification and type to the same customer at the same destination during any calendar quarter includes 6,000 pounds of sheet and strip hot rolled; 6,000 pounds of cold reduced sheet or strip; 6,000 pounds of galvanized sheet or strip 2,000 pounds of tin or terne plate. These are the total quantities which may be obtained in one quarter and are obtained by placing on the order certificate signed manually, reading as follows:

"The undersigned hereby certifies to the distributor with whom this order is placed and to the War Production Board, subject to the criminal penalties provided in Section 35a of the United States Criminal Code, that receipt of the steel covered by this order, together with all other steel received by, or on order for delivery to, the undersigned, from all sources, during the same quarter, will not exceed the limit specified in Paragraph (d) (4) of CMP Regulation No. 4."

The WPB men pointed out that the oil conservation and conversion program followed a pretty rough course during the winter of 1942-1943, but that the problem is by no means settled and it now appears as though in the coming winter (1943-1944) the need for conversion and conservation will be even more acute than last winter. Therefore, contractors doing warm air heating work should in every case encourage home owners to convert from oil to coal or should make a determined effort to put the heating facilities of every oil user in the best possible condition.

It was also announced that material has been allocated for 5,000 Class A stokers each month and addi-

(*Continued on page* 81)

Association Activities

Michigan

The Michigan Sheet Metal, Roofing, Heating and Air Conditioning Contractors Association is considering an emblem, and a design appears in the March, 1943, issue of "Sheets." It is proposed that the emblem be copyrighted and registered so that the Association would be sole owner and may dictate the terms under which it might be used by a member. The idea is to eventually publicize the emblem to the point where customers will demand its protection just as now the better informed demand the manufacturers guarantee on builtup roofs.

Revised Conservation Order L-41, effective February 19, is covered. The outlook, controlled materials—steel, copper and aluminum—and construction work and repair forms are discussed.

General Limitation Order L-280—Fans and Blowers—with necessary reports, is covered.

Tribute is paid to President Elmer G. Schartow, and the President's Message is reproduced.

N. J. Biddle, 5951 Fischer Avenue

◆

St. Louis

Associated Sheet Metal and Air Conditioning Contractors of St. Louis, Missouri, installed 1943 officers on January 11, as follows:

President—H. Wright
Vice-President—A. A. Cuneo
Secretary—W. Cavallo
Treasurer—Ben Kolbenschlag

◆

Chicago

The following were recently elected as officers and members of the board of directors of the Air Conditioning Contractor's Alliance:

W. G. Burgraeve,
Alladen Engineering Co., President

George Kalvog,
Austin Sheet Metal Wks., Vice-President

Jay Boslough,
Boslough Heating Corp., Director

B. E. Olson,
Columbia Sheet Metal Wks., Director

Fred L. Lensing,
A. W. Lensing Sons, Inc., Director

H. Clausen,
Anchor Sheet Metal Wks., Director

J. Harvey Manny,
Robinson Furnace Co., Director

A special tribute was paid by the members to Mr. Boslough, the retiring president, who had served for the past two years.

R. Hamlin Petty, Sr., Man. Dir.

◆

Filter Manufacturers Association

The name of the National Association of Air Filter Manufacturers was changed to the Air Filter Institute at a recent meeting held in Chicago.

The officers of the Institute are:

Charles G. Lamb, Detroit Air Filter Co.—President
Cliff Rowley, Owens-Corning Fiberglas Co.—Vice-President
J. R. McConnell, American Air Filter Co.—Secretary-Treasurer

Illinois

The Sheet Metal Contractors Association of Illinois, promoting better trade conditions, more pleasant relations and education, has postponed the annual convention announced from a late April date to May 5 and 6.

MAY 5, 1943

Registration—9:00 A. M.-10:00 A. M.
10:15 A. M.—Call to order and report of President. Appointment of Convention Committees.
11:00 A. M.—Steel Warehouse Conditions as applied to Sheet Metal Contractors, by Burton L. Wolff, Vice President, Benjamin Wolff & Co.
2:00 P. M.—Address by George Boeddener, Secretary and Managing Director of National Warm Air Heating and Air Conditioning Association.
3:00 P. M.—Value of a National Association by Joseph Wilder, Editor, American Artisan. Remarks by George Harms.
7:00 P. M.—Smorgasbord and Floor Show.

MAY 6th

10:00 A. M.—Talk by OPA representative. Talk by WPB representative. Discussion.
1:30 P. M.—Open Forum with floor discussions.

1. My experiences in operating a sheet metal shop under present rules and regulations, by E. N. Pluth, Lincoln, Illinois.
2. Industrial Sheet Metal Work in the war effort, by Adolph Reece, East St. Louis, Illinois.
3. Operation of a jobbing business under present rules and regulations, by E. H. Olsen, President, Sheet Metal Products Co., Peoria.
4. Post War Relations with Labor, by R. M. Wallis, Manager, Meyer Heating and Sheet Metal Division of The Meyer Furnace Co.
5. Post War Planning, by F. E. Mehrings, Director of National Warm Air Heating and Air Conditioning Assn.

Cash attendance prizes at each session.

Do you have in stock a surplus of items not now being required in your business but which may be vitally needed by contractors in other localities. If so, bring your list to the convention. There may be someone who needs what you have and others may have what you need.

The association has instituted a movement with the War Manpower Commission to have qualified heating service men placed in a deferred classification, as being essential to public health and safety.

Form 42A or 42B should be filled out and filed by a contractor or his indispensable maintenance men who are under 38 years of age. This should be done immediately, long before such contractors or employees are liable to be called into the service, because if a valuable and indispensable man is called by his draft board, it is very likely that the Board would not have sufficient time to give consideration to his deferment.

Wm. W. Johns, Secretary, Urbana.

◆

Sheet Distributors

A "War Conference" of The National Association of Sheet Metal Distributors will be held at the Hotel Cleveland, Cleveland, Ohio, on Monday and Tuesday, May 17th and 18th.

This will take the place of the thirty-second annual meeting and an unusually large attendance is expected.

Sessions will be held on Monday morning and afternoon, an informal dinner Monday evening, with the concluding session Tuesday morning, May 18th.

The program as now drafted will include only officials of the War Production Board and the Office of Price Administration, who will be prepared to speak authoritatively on the various orders which affect your business. An opportunity will be presented for those in attendance to ask questions.

Please note these dates on your calendar and arrange to be present.

Thomas A. Fernley, Jr., Secretary-Treasurer.

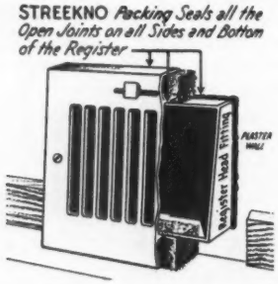
New Products

For your convenience a number has been assigned each item. Circle the items in which you are interested on the coupon on page 62 and mail to us.

△ Indicates manufacturer not listed in 1941 Directory.
● Indicates product not listed in 1941 Directory

△14—Streekno

Excel Heating & Air Conditioning Co., 3715 Belmont Ave., Chicago, offers Streekno register packing—a resilient rock wool product. Streekno packing is used to seal the open joints



against air seepage on the sides and bottom of the register.

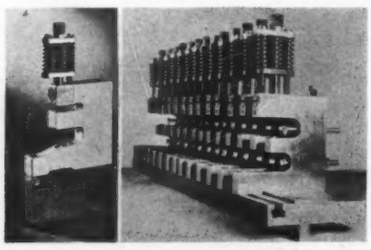
Streekno is fireproof, rot-proof, does not shrink, and is vermin and termite-proof.

One set of Streekno consists of four units each 2 x 2 in. and 15 inches long—one for each side, top and bottom of the register.

△15—Hole Punching Unit

The Strippit Corporation, North Tonawanda, N. Y., announces the new Wales Type "E" hole punching unit for punching extruded shapes and sections, or a series of holes simultaneously in shapes on press brakes.

Each Wales unit is made up of punch, die, holder, stripping spring



and guide. The punch and die are held permanently in perfect alignment. By tightening one bolt, the unit is locked into position on rail. Flexibility of positioning also makes possible using a template as a guide for still quicker pattern set-ups.

Center projection carrying die member extends into all shapes of extruded work and provides clearance for the legs in lower gap.

◆

16—Tulox TT Tubing

Extruded Plastics, Inc., Norwalk, Conn., announces "Tulox" TT seamless plastic tubing available in all diameters up to 2 in. O. D. The range will be increased to 2½ in. OD to meet requirements of war production.

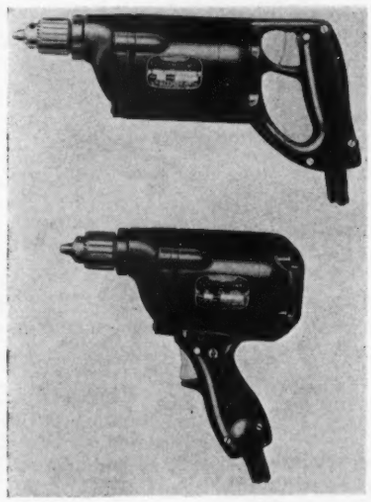
This tubing, extruded from Tennessee Eastman cellulose acetate butyrate, is available from warehouse stocks throughout the country through Crane Company, Chicago, and Julius Blum & Company, Inc., New York.

◆

17—Plastic Housed Drills

Black & Decker Mfg. Co., Towson, Md., has designed "Drillite" plastic housings for the ¼-in. and the new ⅜-in. Standard drills.

Drillite plastic is made with a shredded cotton duct base to withstand considerable abuse and wear.



The plastic is heat resistant, and an insulator against dielectric shock. The housings are smooth and easy to handle, with a lustrous black finish.

Steel inserts have been cast into the plastic housings to carry all ball-bearings, and threaded steel inserts in the field housing for housing assembly screws. Steel air vents in the commutator end housing insure motor ventilation.

Both units are offered with either end or side handle control, equipped with "Pistol Grip and Trigger Switch"; and with Universal motors, alternating or direct current.

◆

△18—Stainless Steel Flux

Farrelloy Co., Inc., 1241 N. 26th St., Philadelphia, offers No. 6 Stainless Steel Flux for stainless steel and nickel alloys.

No. 6 Stainless Steel Flux is compounded to flux at a low temperature, thus eliminating buckling when light gauge stainless steel is soldered. No. 6 contains a greater proportion of non-fuming chemicals. Four ounce, 1 quart and 1 gallon quantities are sold.

△19—Eye-Protection Glass

American Optical Company, Southbridge, Mass., has developed a new eye-protection glass—Didymium-Noviweld—which permits eyes of gas welders to pierce blinding glare and see welding operations from beginning to end, thereby increasing production of welded war equipment.

In all types of flame-welding, the new Didymium-Noviweld safety goggle lenses cut down the high intensity sodium rays of the fluxes. Flame workers can thus look right through the yellowish cloud of "flux-flare," see the red and the molten area more clearly, and thereby step up their efficiency in every phase of the welding operation, particularly the flame welding of aluminum and steel. The lenses also protect eyes by absorbing the ultra-violet and infra-red rays generated during welding.

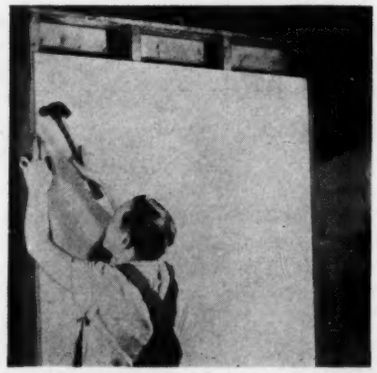
Noviweld - Didymium lenses are manufactured under strict laboratory control, and meet the Bureau of Standards specifications for glare control. Three shades are available, numbers 4, 5 and 6 corresponding with shade numbers of the standard AO Noviweld lenses.

◆

20—Stonewall Board

The Ruberoid Co., 500 Fifth Ave., New York City, is introducing a fabricated asbestos-cement, all-purpose building board—Stonewall.

Being made of asbestos fiber and Portland cement, it is fireproof, rat-



proof, vermin-proof and rustproof, has strength, and needs no paint.

Stonewall is made in standard size sheets measuring 4 feet by 8 feet and in three thicknesses—3/16, ¼ and ⅜ inch. It is flexible, can be sawed or scored, drilled and nailed. Color is natural gray.

It takes clean, efficient air *filters* to clean air.

With spring housecleaning under way, now is the right time to complete the cleaning job and sell your customers new Detroit Filters.

Detroit Filters will help keep your customers' homes clean by catching dirt and dust before it gets a chance to circulate with the air into the rooms.

Burden of subsequent cleanings is lightened when filters are regularly inspected, cleaned or replaced. Your customers will thank you if you replace their filters with "Detroit" Air Filters. Their homes will be cleaner and they'll save money in the bargain, because "Detroit" Air Filters give more cleaning per dollar invested.

And don't forget — there's a profit in it for you, too.

CHECK THESE OUTSTANDING POINTS OF SUPERIORITY

- ✓ **ECONOMY**—Patented cellular design gives more filtering capacity per dollar.
- ✓ **FREE AIR FLOW**—Uniform air distribution assures free flow with maximum filtering.
- ✓ **DUST CAPACITY**—Thoroughly impregnated with special nondripping compound to retain dust-collecting ability indefinitely.
- ✓ **ODORLESS**—Adhesive material is absolutely odorless and will not turn rancid.
- ✓ **LONG LIFE**—Entire thickness of filter used in cleaning, thus providing long and efficient filtering.
- ✓ ***STRENGTH**—Selected materials and sturdy construction prevent sagging. No danger of small particles being carried into air stream.
- ✓ **POLLEN**—Highly effective in providing relief for persons allergic to air-borne pollen.
- ✓ **CLEANING**—Guaranteed factory cleaning and renewal service when necessary—a further economy.

*No critical materials are used in the construction of "Detroit" Air Filters.

An attractive envelope stuffer is available imprinted with your name. If you want some to send out to your customers, drop us a line on your letterhead.

Oil is Ammunition
USE IT WISELY!

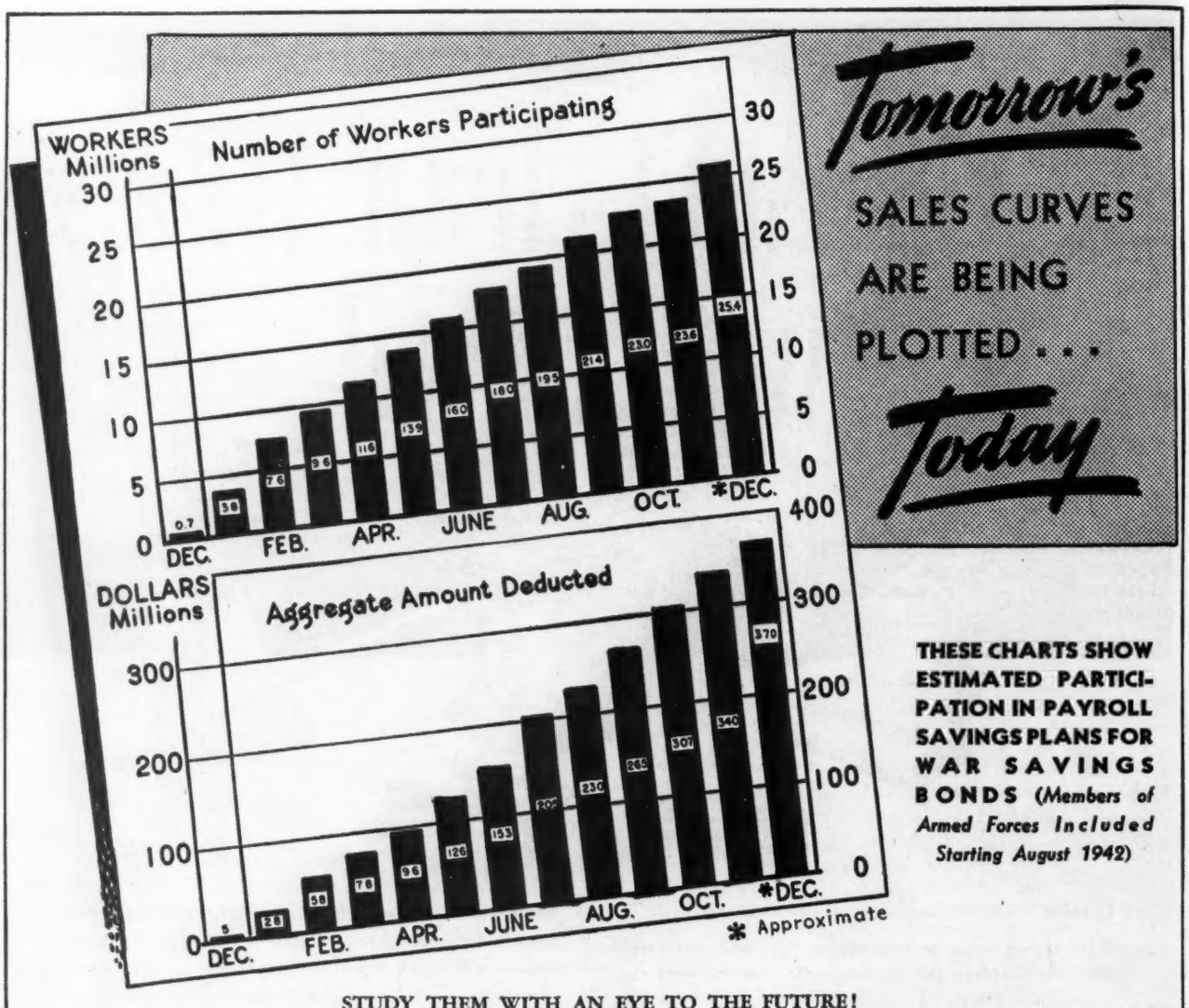
DETROIT LUBRICATOR COMPANY

General Offices: DETROIT, MICHIGAN

Division of American Radiator and "Standard" Sanitary Corporation

Canadian Representatives—Railway and Engineering Specialties Limited, Montreal, Toronto, Winnipeg

WATCH -DL



THESE CHARTS SHOW ESTIMATED PARTICIPATION IN PAYROLL SAVINGS PLANS FOR WAR SAVINGS BONDS *(Members of Armed Forces Included Starting August 1942)*

STUDY THEM WITH AN EYE TO THE FUTURE!

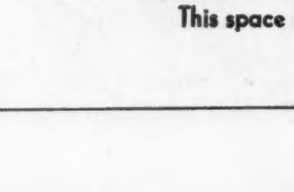
There is more to these charts than meets the eye. Not seen, but clearly projected into the future, is the sales curve of tomorrow. Here is the thrilling story of over 25,000,000 American workers who are today voluntarily saving close to FOUR AND A HALF BILLION DOLLARS per year in War Bonds through the Payroll Savings Plan.

Think what this money will buy in the way of guns and tanks and planes for Victory today—*and mountains of brand new consumer goods tomorrow.* Remember, too, that War Bond money grows in value every year it is saved, until at maturity it returns $4 for every $3 invested!

Here indeed is a solid foundation for the peace-time business that will follow victory. At the same time, it is a real tribute to the voluntary American way of meeting emergencies that has seen us through every crisis in our history.

But there is still more to be done. As our armed forces continue to press the attack in all quarters of the globe, as war costs mount, so must the record of our savings keep pace.

Clearly, on charts like these, tomorrow's Victory —*and tomorrow's sales curves*—are being plotted today by 50,000,000 Americans who now hold WAR BONDS.



Save with

War Savings Bonds

This space is a contribution to America's all-out war effort by

AMERICAN ARTISAN

New Literature . . . .

For your convenience in obtaining copies of new Literature use the coupon on page 62.

223—Metal Joining Jobs

Thomson-Gibb Electric Welding Co., Lynn, Mass., is distributing a 4-page folder on Thomson Tool and Maintenance Welders—with a dozen ways to conserve critical materials—tools, metal parts, production time and maintenance expense.

◆

224—Automatic Controls

The Mercoid Corporation, 4201 Belmont Ave., Chicago, offers Catalog No. 600, covering automatic controls for heating, air conditioning, refrigeration and various types of industrial applications. There are 64 pages, indexed alphabetically and as to type number of control.

◆

225—Plastipitch Protected Roofing

Coated Products Corporation, Verona, Pa., is distributing a 4-page folder covering Plastipitch—a method of weather-proofing many types of prefabricated metals and shapes, roofing, siding and accessories.

Plastipitch is fire resistant, also acid and alkaline resistant and impervious to ranges of climate.

◆

226—Spray Equipment On the Job

Eclipse Air Brush Co., Inc., 300 Park Avenue, Newark, N. J., offers "Eclipse Spray Equipment On The Job"—a 32-page, 8½ x 11 booklet with 8-inch pictures of actual spray operations in various industries. It is like taking a sight-seeing trip without leaving your desk, to see how the other fellow handles his spray problems.

◆

227—Sil-Fos and Easy-Flo for Brazing

Handy & Harman, 82 Fulton St., New York City, is distributing a 20-page Bulletin—No. 12-A—on low-temperature brazing of metals with Sil-Fos and Easy-Flo for speed, strength and economy. Metal joining with Sil-Fos and Easy Flow, the use of Handy Flux, economy, costs, and the various fields of industry are discussed. They join iron, steel, stainless, alloys, copper, brass, bronze, copper, etc.

◆

228—Alloy Metals Finding List and Sources

Hobart Brothers Co., Box EW-87, Troy, Ohio, is distributing "Alloy Metals Finding List and List of Sources" for the convenience of Engineering and Purchasing Departments. Hobart is offering special information and new developments in metals to help engineers, designers, metal workers and purchasing departments. The service will cover the new NE alloy steels, new building specifications, elements in alloy steels, welding nichrome alloys.

◆

229—Flotrol Health-Conditions the Air

Monmouth Products Co., Cleveland, is distributing a two-page folder, illustrating and describing the Air-Health Conditioner—Flotrol-Type—with "ample capacity to make the air in heated homes fit to live in and breathe." The Flotrol humidifier control valve has a plastic cup, cover and float, die molded. The water level and rate of drip feed are visible in the transparent cut.

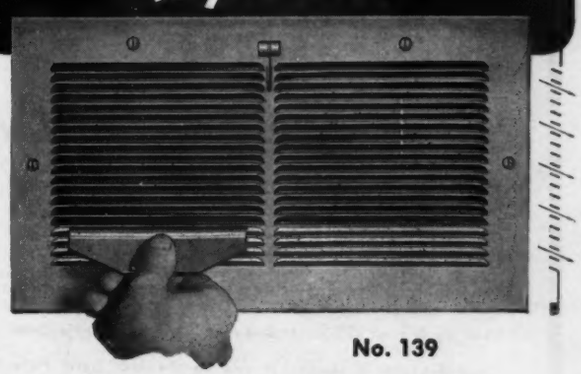
A sales letter with "Important Facts" on health-conditioning the air accompanies the folder.

◆

230—Anti-Rust Compounds

Black Bear Company, Inc., 23-01 44th Drive, Long Island City, New York, has issued a new broadside designed to help War Production men who are concerned with Rust-Proofing. The folder explains the uses and methods of application of Black Bear Anti-Rust "O," and Black Bear Anti-Rust "I." The "O" compound is designed expressly for outdoor use; Black Bear "I" is recommended for indoor use only. Both types are widely used for the protection of machine parts, castings, stampings, fabrications, assemblies, etc., for shipment or storage.

INDEPENDENT
WROUGHT STEEL
Air Conditioning Registers



No. 139

Flexible Grille Bars Make Adjusting Easy

This modern Independent register has attained great popularity because it presents fine appearance and high efficiency at moderate cost. The grille bars are formed of sheet metal and come regularly adjusted to direct air flow slightly downward. Being flexible, they can be bent to direct air flow to any other desired angle, upward, downward or straight outward. Materials and workmanship are of first quality. Valve is positive, free working and stays firmly in position.

Always Leading . Always Progressing

Write for Catalog 41-AC

THE INDEPENDENT REGISTER CO.
3747 EAST 93rd STREET
CLEVELAND, OHIO

The Modern Sheet Metal

BY combining sheet steel wtih stearine-cottonseed pitches and pulverized slate we have produced the outstanding successor to galvanized iron and sheet copper at about one-third the cost of copper.

Thoroughly tested against weather, moisture, heat, cold, fumes, salt air and fire. Will not run at 230° F., can be bent double at 32° F., and is classified as fire retardant.

Cheney Metal is tough. It can be sheared, bent, Pittsburgh locked, mallated, die formed, riveted, soldered, and worked with regular shop tools.

Forms easily into warm air heating or ventilating ducts, flashings, valleys, gutters, metal roofs, downspouts, termite shields, expansion joints, and all general sheet metal work.

AVAILABLE NOW

Sheets (all regular gauges and sizes)
Corrugated Roofing 26" and 27½"
Conductor Pipe and Elbows
Gutter
2 and 3 V Crimp Roofing
Clapboard Siding
Cheney Thru-Wall Flashing
Cheney Reglet (for concrete)

Meets Government specifications and while the government is taking about 75% of our production we still have plenty of material available for maintenance and repair. Consult your nearest distributor about new low priority requirements. He carries Cheney Metal products in carload quantities.

SOLD BY THE FOLLOWING DISTRIBUTORS

BALTIMORE: Lyon, Conklin & Co., Inc.
BIRMINGHAM, ALA.: Arnold Supply Co.
BOSTON: Herrick Company
BUFFALO: The J. M. & L. A. Osborn Co.
CHICAGO: Central Steel & Wire Co.
CINCINNATI:
The J. M. & L. A. Osborn Company
Central Steel & Wire Company
CLEVELAND: The J. M. & L. A. Osborn Co.
DAYTON, O.: Central Steel & Wire Co.
DETROIT: The J. M. & L. A. Osborn Co.
MEMPHIS, TENN.: Pidgeon-Thomas Iron Works
NEW ORLEANS: The Orleans Steel Products Co., Inc.
NEW YORK: Bayonne Steel Co., Inc., L. I. City
PHILADELPHIA: W. F. Potts, Son & Co., Inc.
PITTSBURGH: Follansbee Steel Corp.
ROCHESTER: Follansbee Steel Corp.
ST. LOUIS: Hammond Sheet Metal Co.
WASHINGTON, D. C.: Lyon, Conklin & Co., Inc.

● DISTRIBUTORS: Some desirable territory still available. Write today.

CHENEY METAL PRODUCTS CO.
Trenton, New Jersey

New Literature . . . .

For your convenience in obtaining copies of new Literature use the coupon on this page.

231—Metal Cut-Off Band Saw

Johnson Manufacturing Corp., Sales Development Div., 50th Floor, Chrysler Building, New York City, is distributing a bulletin describing the Johnson metal cut-off band saw—designed for use by unskilled labor. Set-ups take only a minute or two.

◆

232—Welding Exhausters and Ventilators

Chelsea Fan & Blower Co., Inc., Irvington, N. J., is distributing a 4-page folder—Bulletin 736—describing their new and improved fume exhauster—the Octopus and the Octopus, Jr., for confined working areas.

Flexible hoses connect these units to the working area, and each can be converted from exhausting to fresh air ventilating by changing the position of the tube adapters. Caps are provided for closing nozzles not in use.

◆

233—Blow Torch Helps

The Turner Brass Works, Sycamore, Illinois, is publishing "Turner Topics" in which instructions for operating and maintenance of blow torches are given in the action pictures of "Torchy Theatre." Three issues are available: No. 1—"How to Light Your Blow Torch"; No. 2, "How to Clean Your Blow Torch"; and No. 3—"How to Solder."

◆

234—Oxyacetylene Flame Adjustment Color Chart

Air Reduction Co., 60 E. 42nd St., New York City, has prepared for guidance of welders a chart for oxyacetylene flame adjustment. It shows natural color photographs of five fundamental flame adjustments:

1. Acetylene burning in air
2. A strongly carburizing flame
3. Slight excess of acetylene flame
4. Neutral flame
5. An oxidizing flame.

The chart conveys the proper appearance of the various welding flames faster and more accurately than any amount of descriptive instruction.

◆

235—Short Run Piercing Economy

Wiedemann Machine Company, 1815 Sedgley Ave., Philadelphia, is distributing Bulletin No. 92 entitled "Turret Punch Presses with Gauge Tables"—the story of short-run piercing economy. The machines are described and illustrated, the gauge tables are pictured—both pin and rack type—as well as a direct measuring table and gauge and a double bar direct measuring table. A data sheet is included to enable the company to make recommendations of the correct model, gauging arrangement, and necessary punches and dies best suited.

FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.
Chicago, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature." (Circle numbers in which you are interested):

15	15	16	17	18	19	20
223	224	225	226	227	228	229
230	231	232	233	234	235	

Name .....

Company .....

Address .....

Are you Manufacturer——Jobber——Dealer——

News Items . . . . . .

Approved Fire-Fighting Devices

The Safety Research Institute, Inc., 420 Lexington Ave., New York City, advises that the merits of any fire-fighting device can be judged by whether or not it has been approved by Underwriters' Laboratories, Inc., or Factory Mutual Laboratories. If so, it bears a label indicating such approval. If any manufacturers of fire-protection equipment fails to apply, or if approval is denied by either of these bodies, the efficacy of his product should be questioned. Manufacturers who have obtained approval for their products invariably make a point of this fact in their advertising and publicity.

Up-to-date lists of approved equipment can be obtained directly from the two laboratories mentioned above (Underwriters' Laboratories, Inc., 207 E. Ohio St., Chicago, Factory Mutual Laboratories, 184 High St., Boston).

Personal

Howard Perkinson, Durkee & Perkinson, White Plains, New York, will now operate under the name of **The Perkinson Company.**

◆

George Lubahn, junior partner of Wagner & Lubahn, 146 Pearl St., Jackson, Michigan, will henceforth operate as the **Lubahn Sheet Metal Works.**

◆

Frank E. Mehrings, vice president and sales manager The Meyer Furnace Company, Peoria, Illinois, was elected a member of the Board of Education in the April election.

Mr. Mehrings is a member and past president of the Peoria Advertising and Selling Club; Commissioner, Peoria Housing Authority; vice president and director, National Warm Air Heating and Air Conditioning Association; director and past president, Greater Peoria Civic Association; member and past director, Better Business Bureau; past vice president, South Side Business Men's Club; P. H. S. Parent-Teachers' Association; Veteran World War I; U. S. Navy; United States Civil Service; Illinois Reserve Militia; American Legion.

◆

Warm Air Heating Supply Company is the new name for the Detroit Furnace Supply Company, of which **Gail C. Mason** is president. Located at 5195 Loraine Ave., the firm carries a complete line of repair parts and furnace supplies.

◆

V. R. Rockel, 7481 Carleton Ave., St. Louis, has moved into his new building at 6733 Olive Road in which he will operate a heating and sheet metal firm. He was associated for years with the firm of Droste and Rockel, 4956 Natural Bridge Avenue.

Obituary

John Wierenga, one of the Wierenga Brothers—roofing and sheet metal contractors of 231 Brown St., Grand Rapids, Michigan—passed away on February 11. Mr. Wierenga was 56 years old, and a brother of P. O. Wierenga, treasurer of the Michigan Sheet Metal, Roofing, Heating and Air Conditioning Contractors' Association.

John T. McTigue, 79, for many years one of the most prominent members of the sheet metal craft in Nashville, Tennessee, and a former member of Nashville City Council and of the Davidson county court died March 24 at his home, 916 Gilmore Avenue, following an illness of two years. He was head of J. T. McTigue and Sons, sheet metal contractors, on Commerce Street until his retirement two years ago. He is survived by two daughters and five sons—John T. Jr., Joe, E. B. of Nashville and Robert E. McTigue, LaGrange, Ga., and Harry McTigue, Minneapolis, Minn.

In the Service

★

Niagara machines for shearing and forming sheet metal are speeding up war production everywhere.

Wherever sheet metal is being sheared or formed man-hours are being saved by Niagara Power Squaring Shears and other machines.

In addition to speeding up production, they are also helping keep the wheels turning by doing the many jobs essential to plant maintenance and repairs.

. . .

Niagara Machine & Tool Works, Buffalo, N. Y. District Offices: Cleveland, Detroit, New York.

BUY UNITED STATES WAR BONDS

not PROMISE . . . but *Performance!*

"24 HOURS A DAY... TWO YEARS ...WITHOUT REPLACEMENTS..."

DRAVO CORPORATION
PITTSBURGH, PA.

March 9, 1943

Lockformer Company
Chicago, Illinois

Gentlemen:

Please forward a parts list catalogue pertaining to an 18 Gauge capacity Lockformer, Serial No. 1019, which we have in our shop at the present time.

We have been working this machine twenty-four hours a day for almost two years without any replacements. Naturally, we will be needing some replacements at an early date. Judging from the performance of this machine, I cannot praise it too highly.

Very truly yours,

DRAVO CORPORATION

W. Glassbrenner
Assistant Superintendent
Sheet Metal Shop

WG:IM

"ONE MAN AND A LOCKFORMER CAN MAKE MORE PITTSBURGH LOCKS THAN 16 MEN WORKING AT 8 BRAKES!"

Write for Catalog showing complete Lockformer line.

The LOCKFORMER Co.
4617 ARTHINGTON STREET, CHICAGO, ILLINOIS

With the Manufacturers . . .

Clean Filters Save Fuel

Clogged filters are wasteful, according to the Detroit Lubricator Co., producers of Detroit air filters. Clean filters save fuel by allowing the proper quantity of heated air to get into the rooms where needed.

The company cleans or renews filters. They also have a filter which uses no critical materials.

◆

Pomona Pump in Merger

Joshua Hendy Iron Works, of Sunnyvale, California, has acquired the Pomona Pump Co., its subsidiary Westco Division, and the Crocker-Wheeler Electric Manufacturing Company. The merger of these concerns expands the line from steam engines and steam turbines to turbo-generators, motors and other electrical equipment, and pumps.

A. J. M. Baker, general manager of the Crocker-Wheeler Electric Manufacturing Company Division; Chas. E. Moore, president of Joshua Hendy Iron Works; and George A. McKenna, general manager of the Pomona-Westco Pump Co. division.

The Hendy organization now owns and operates not only the 60-acre factory site at Sunnyvale, California, but the big Pomona plant at Pomona, its two plants in St. Louis, the Crocker-Wheeler plant at Ampere, New Jersey, and new plants at Torrance and Long Beach, California. From these plants is pouring daily a steady stream of marine engines, steam turbines, turbo-generators, motors, pumps and other equipment and ship fittings in order to satisfy the demand by the Maritime Commission for more and more cargo space.

◆

Lincoln Incentive Wage Payments

The Lincoln Electric Company, Cleveland, in ten years of experience with incentive wage payments, including both war and peace production, panic and prosperity years, has proved that such incentive payment properly organized and properly applied will result in progressively lower prices for the consumer, progressively higher wages for the worker and progressively higher dividends for the owner. This is not only a means for greater war production so essential at this time, but it also is a philosophy which can and has solved the difficulty between labor and management, between management and customer and between customer and stockholder.

The range of the Lincoln incentive payment is from $10 to $25,000, depending upon the responsibility and productive ability displayed by the individual through the year. This incentive is distributed approximately 90 per cent to the shop and office workers and 10 percent to management.

The average yearly production per man in other manufacturing plants is between $4,000 and $10,000 per man. The production this year of the Lincoln worker will exceed $30,000 per man. This record is made at the selling price of their product.

With the Manufacturers . . .

Alco Valve in New Home

Alco Valve Company, St. Louis, makers of solenoid valves, is now located in a modern, three-story factory and general office building at 865 Kingsland Avenue. The new plant doubles the floor space of the company's three vacated plants.

Sheet-Lock Granted Metal

Sheet-Lock Co., 4521 N. Clark St., Chicago, Bill Petersen, Engineer, has been granted a generous tonnage of metal for the production of edge and corner joining strip, used in joining substitute board in the construction of warm air ducts.

Allegheny Ludlum Tool Steel Sales

Allegheny Ludlum Steel Corporation, Brackenridge, Pa., announces that tool steel sales headquarters—in charge of Howard M. Givens, Jr., Manager of Tool Steel Sales—have been shifted to Dunkirk, N. Y.

Mr. Givens became manager of the corporation's tool steel sales division in 1941, located at the Pittsburgh offices. The shift is intended to centralize both the sales and manufacturing supervision of tool steels at the Dunkirk plant—Allegheny Ludlum's main tool steel producing unit.

Personal

Robert H. Gibb, for several years past a member of the Pittsburgh District sales organization of the **Allegheny Ludlum Steel Corporation** and recently assistant district manager, has been appointed district manager of that office, according to Russell M. Allen, the company's general sales manager.

◆

Camille L. Gairoard of West Orange, N. J., who has directed the sales policies of **J. Wiss and Sons Co.**, Newark, for more than 42 years as general sales manager, has resigned. Mr. Gairoard has been connected with Wiss since 1898.

Mr. Gairoard is also resigning as Chairman of the Board of Directors of the Shears and Scissors Division of the American Cutlery Association. Mr. Gairoard was president of and will devote his entire time to Kraeuter & Company of Newark—manufacturers of hand tools—and to the Kroyden Golf Company of Maplewood, N. J. Both of these concerns are now doing 100 percent war work.

◆

B. E. Bostwick has been appointed in charge of Sales for **J. Wiss & Sons Co.** of Newark, N. J., manufacturers of shears, scissors, and tinners' snips, whose products are being used almost 100 per cent on War Defense Work.

Mr. Bostwick has been with the Wiss Company for 16 years, and for the past 9 years has served as Assistant Sales Manager.

◆

A. W. Howe was re-elected president and general manager of **The J. M. & L. A. Osborn Co.** at the company's annual meeting held January 28. Other officers re-elected were **C. E. Caddy**, vice president; **J. W. Harrison**, secretary, and **G. F. Climo**, treasurer. Directors are **L. A. Bahler, C. E. Caddy, G. F. Climo, J. T. Hagan, J. W. Harrison, A. W. Howe** and **C. T. Howe.**

◆

Sall Mountain Company, 176 West Adams St., Chicago, announces the appointment of **Air Devices, Inc.**, 17 E. 42nd St., New York City, as their exclusive representative in the Eastern Seaboard states for their new non-metallic prefabricated Sal-Mo supply duct.

Air Devices, Inc., will utilize their 22 territorial representatives in the sales of Sal-Mo supply duct.

Yesterday . . .
Today . . .
Tomorrow

In the post war era PEXTO Machines and Tools, and the skilled men who use them, will have a large part in the rebuilding of America's high standard of living.

PEXTO
SINCE 1785

Combined Shears and Punch

THE PECK, STOW & WILCOX COMPANY SOUTHINGTON, CONNECTICUT, U. S. A.

No. 130—The ACE of Baseboard Registers.

REGISTERS
for CIVILIAN NEEDS

As this is written, WPB Order M-126 continues to prohibit the manufacture of registers for civilian use, although a revision of the Order, permitting manufacture of registers, may be issued before this advertisement is read. However, our stock of standard items is still such that we can very likely supply your essential register needs. Hence your orders, as always, will be greatly appreciated. And you can rest assured that we will leave no stone unturned in our efforts to be as helpful as possible in taking care of your requirements.

On housing projects carrying priorities consult H&C; for, in spite of vastly expanded production for war purposes, we still have the facilities to give you real service and the best of registers at competitive prices.

Current catalog of the complete line is No. 42

H&C

HART & COOLEY MANUFACTURING CO.

World's Largest Manufacturers of Registers, Grilles, Furnace Accessories

HOLLAND • MICHIGAN

With the Manufacturers . . .

Peerless Celebrates Golden Anniversary

The Peerless Electric Company, Warren, Ohio, is celebrating its 50th year in the electrical industry. The firm was founded in 1893 by Elmer W. Gillmer as The Warren Electric and Specialty Company. Their first product was a carbon lamp, but transformers, electric fans, and direct current motors were added shortly afterwards.

In addition to The Warren Electric and Specialty Company, Elmer Gillmer, who was an active pioneer in the electrical industry, founded The Economy Lamp Company, The Colonial Fan and Motor Company, Colonial Electrical Company, and The Peerless Electric Company, under which name these various companies were all merged and incorporated in 1902.

Present Peerless products are high grade AC and DC electric motors, sold principally to machinery manufacturers; and exhaust fans, blowers, and winter air conditioning equipment, sold through dealers and manufacturers.

The Golden Anniversary Banquet held at Warren recently, celebrated 50 years of Peerless service both to the electrical industry and to users of fine electrical equipment. This affair was attended by Peerless employees, Peerless representatives from all over the United States and many distinguished citizens of Warren. Attractive pins honoring service from 10 to 40 years were awarded by Ralph W. Kroehle, president of the company, to some 70 employees. In keeping with the tradition of active family management, it is interesting to note that Mr. Kroehle, the present head of the firm, is the son-in-law of the founder, Elmer W. Gillmer.

◆

Detroit Lubricator Company, 5900 Trumball Ave., Detroit, announces the appointment of **E. J. Doucet,** as General Sales Manager.

Mr. Doucet has been associated with Detroit Lubricator Company for the past 26 years, and until two years ago was in charge of oil burner equipment sales for the Western territory with headquarters at the company's Chicago Office. Subsequently, Mr. Doucet was transferred to the main office at Detroit, where he held the position of Sales Manager in the Oil Burner Equipment Division, and then Sales Assistant to the President, which position he held up to the time of his present appointment as General Sales Manager.

◆

Michigan State Short Course

ABOUT three o'clock P.M. March 25, 1943, the "Twelfth Annual Forced Warm Air Conference" sponsored by the National Warm Air Heating and Air Conditioning Association at Michigan State College became history. Seventy-five representatives of manufacturers, jobbers, dealers, and contractors, from eight states and one province of Canada, attended. Less than half the attendants were Michigan residents and a few travelled as many as one thousand miles, indicating the interest in this type of education, and the appreciation of this effort on the part of the Association.

Not much time was spent looking back except to honor those who were pioneers in the development of the fundamentals of the theory and practice of forced warm air heating. The Monday night meeting, which was designated as Western Michigan night, was a joint meeting of the Conference and the American Society of Heating and Ventilating Engineers. First Vice President of the latter, Sewell H. Downs, Clarage Fan Co., Kalamazoo, reviewed the field of flow of fluids. He gave credit to the pioneer investigators, Euler, Reynolds and others, and pointed out many thermo-

dynamic principles easily overlooked or forgotten by the designer who fails to take the perspective look. Lt. Col. Ford Hick, M.D., formerly of the staff of the University of Illinois, College of Medicine, reviewed the medical research in the field of human physiologic reactions to environment, particularly in humid, high temperature surroundings where the body has difficulty in disposing of its excess heat.

The problems of the present moment, prompted by fuel rationing and scarcity of materials and manpower, formed the basis for much discussion. Bruce McLouth from the Office of Chief of Engineers, Washington, discussed the status of forced warm air heating in the army post camps and stations. Professor J. M. Campbell, Michigan State College, reviewed the fundamentals of combustion in the light of economy, and Milt Jordan of Timken Silent Automatic Burners and Adolph Frantz of Motor Wheel Corporation gave advice and instruction on adjustment and operation of oil burners in the light of maximum saving and life of equipment.

The use of substitute materials for ducts was discussed by Messrs. Ed Root and Bud Ruh and costs compared with orthodox installations. The Sall Mountain Co. furnished materials for the installation of a duct system in the problem house erected in the College Mechanical Engineering Laboratory. The duct system was erected by contractor Bryan French, Pontiac.

Harold Sharp and George Boeddener, president and secretary respectively of the N. W. A. H. & A. C. Assn., sounded a note of solid confidence in the future of the art by pointing out how the industry has responded to this emergency and from reliable statistics demonstrated a great future market. John Miller, engineer, Motor Wheel Corporation, gave technical aid to this look into the future by discussing the corporation's research in the field of heating trailers and small portable dwellings.

As is the custom in these conferences a forced warm air system for an average residence was designed from heat loss to balancing. This problem was ably discussed and taught by J. Earle Maynard, Rybolt Heater Co., Ed Root, Superior Safety Furnace Pipe Co., Guy Voorhees, Hall-Neal Furnace Co., and Professor C. H. Pesterfield, Michigan State College.

◆

Amendments, Interpretations

(*Continued from page* 19)

Amended PR No. 11A

BY AN amendment of Priorities Regulation No. 11A, Production Requirements Plan units *which do not process* the materials listed in Regulation No. 11, but purchase only fabricated items or materials other than those listed, may now apply, during the calendar quarter beginning April 1, the ratings they were authorized to use by their first quarter PD-25A and PD-25F certificates to the same quantities of fabricated items and unlisted materials.

Previously, Regulation No. 11A limited use of first-quarter ratings by a PRP unit during the second quarter to the amount of *unlisted materials* and of fabricated items needed to balance the listed materials it was authorized to receive.

FOR LOW-COST HEATING, QUICK INSTALLATION AND METAL CONSERVATION

DIRECTHERM

UNIT HEATERS

STOKER-FIRED

It is a self-contained unit and can be installed or moved in a few hours. No duct work, radiators, or pipes are necessary.

To tend a Directherm requires a minimum of attention. Once the automatic controls are set, they need not be changed. An unskilled man can take care of it . . . important in these days of labor shortage.

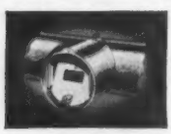
Made in 6 sizes (300,000-1,700,000 BTU).

AIRTHERM MANUFACTURING COMPANY

706 S. SPRING AVE. · ST. LOUIS, MO.

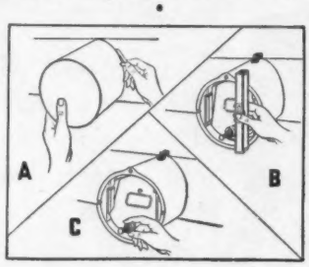
Pardon us, Ma'm.

. . . BUT WITH A FIELD CONTROL YOU DON'T NEED A BED WARMER



LAST YEAR thousands bought Field Draft Controls to save money — 5% to 25% of their fuel bill. NOW — under severe fuel rationing — your prospects will respond gratefully to a NEW sales appeal. HERE are magic words: "A Field Control keeps you WARMER on LESS fuel!" No one must waste fuel; therefore everyone is a prospect. And Field provides complete residential and commercial coverage. There's profit in every easy sale, domestic installations often taking under 30 minutes.

INSTALLATION'S SIMPLE AS A B C



A Hold collar snugly against stove pipe in correct position and mark outline on pipe. Snip hole in pipe ½" smaller than mark; snip slits ½" deep around hole.

B Strap collar to pipe; bend ½" slits into collar. Fasten control into collar and true control up and down and sideways by checking with carpenters spirit level for accuracy.

C Factory balanced, control requires only a simple hand adjustment for the particular installation. Set for minimum draft consistent with combustion and heat demands as required.

FIELD CONTROL DIVISION MENDOTA, ILLINOIS

A Tribute... and a Responsibility

When the men and women of Stanley Electric Tools, Division of The Stanley Works, received the Army-Navy "E" award on February 13, it was a much prized tribute to a great production team during the one hundredth anniversary year of the Company.

Upon their shoulders has rested a triple burden. They have been called upon to supply (1) tools for the armed forces . . . to construct and maintain camps, bases, and barracks; (2) tools for war industry . . . to build plants, ships, planes, and other implements of war; (3) tools for the home front . . . to maintain farms, schools, institutions and essential civilian industries.

Hand in hand with this honor for past performance goes a great responsibility for future performance. These men and women fully realize this responsibility. Far from being contented with the "contribution to Victory" already made, they are earnestly striving to make an even greater contribution in the future. Stanley Electric Tools, Division of The Stanley Works, New Britain, Connecticut.

1843 STANLEY 1943

Changes in CMP Regs. 1, 3, 4

A NUMBER of important changes in Controlled Materials Plan Regulations are affected by amendments to CMP Regulations Nos. 1, 3 and 4.

1—Effective at once, no manufacturer may accept an allotment for the manufacture of a Class A product, regardless of the accompanying preference rating, if he does not expect to be able to fulfill the related authorized production schedule. Additionally, if he has accepted an allotment and an authorized production schedule for a Class A product, he may not accept any other delivery order, except one rated AAA, if its filling would interfere with the completion of the previously accepted schedule.

A manufacturer turning out Class B products to fill unrated or low-rated orders must accept higher rated orders, as provided in Priorities Regulation No. 1, unless he is also making a Class A product on an authorized production schedule. In the latter case, he will be guided by the provisions of the paragraph above.

2—A change in CMP Regulation No. 1 gives effect to the recently announced discontinuance of Form CMP-6. That form was originally prescribed for use in placing authorized controlled material orders with a producer of controlled materials. In place of CMP-6, the regulation now provides the following form of certification which may be placed on the purchase order:

"The undersigned certifies, subject to the criminal penalties of Section 35 (A) of the U. S. Criminal Code, that he has received an allotment or allotments of controlled materials (or delivery orders not requiring allotments) authorizing him, pursuant to CMP Regulation No. 1, to place an authorized controlled material order in the amount herein indicated for delivery in the month specified, and that he is authorized to use the allotment number ....."

CMP Regulation No. 3 is amended to permit such persons as dealers, distributors and jobbers, who receive rated orders from their customers bearing allotment numbers or symbols, to use the allotment number or symbol in extending the rating. Previously they were allowed to extend only the preference ratings without allotment numbers. However, allotment numbers used in connection with the extension of preference ratings do not constitute an allotment and therefore may not be used to obtain controlled materials. Here is the certification:

"Preference rating .... Allotment number or symbol .... The undersigned certifies, subject to the criminal penalties for misrepresentation contained in section 35 (A) of the United States Criminal Code, that he is authorized under CMP Regulation No. 3 to apply or extend the above preference rating and allotment number or symbol to the delivery of the items covered by the attached delivery order."

Production material, as redefined in the new version of Regulation No. 3, now includes items purchased by a manufacturer for resale to round out his line, if these items do not amount to more than ten per cent of his total sales.

BEFORE
Dirty, streaky wall necessitating expensive decorating.

AFTER
Clean walls all the time.

STREEKNO
AIR REGISTER PACKING

Here's a new product that with very little effort on your part will add many dollars of profit to your ledgers. STREEKNO is just what your customers have been seeking . . . for its installation on warm air and air conditioning registers eliminates dirty, streaky walls due to air seepage through open joints around the Register Box and the Plaster Wall—Open joints between the Register Box and the Register—Joints between the Register itself and the Plaster Wall—Also open spaces under the Register along the floor. STREEKNO is designed to permanently seal these "Wall-Streakers" and once installed will last as long as the building stands. It is a fireproof — rot-proof — Does not shrink or deteriorate — Vermin and termite-proof — and FITS ANY REGISTER.

EASY TO INSTALL—STREEKNO is simple to install—all you need is a screwdriver. Each register in a home can be STREEKNOTIZED in a maximum of ten minutes.

FREE DISPLAY CARTON—Every unit of STREEKNO is packed in an attractive carton—One display box with easel in every shipping case of 12 units.

LOW SELLING PRICE GIVES LARGE PROFIT!

A STREEKNO installation costs the home-owner only $2.00 per register . . . but saves hundreds. The cost to you is only 55c per register or $6.60 per case of 12 units that will STREEKNOTIZE 12 registers. Send for your trial set of 12 NOW—use the coupon on right.

EXCEL HEATING & AIR CONDITIONING CO.
3715-19 Belmont Avenue Chicago, Illinois

SEND THIS ORDER TO YOUR JOBBER!

Send me trial case of 12 sets of STREEKNO as advertised by Excel Heating and Air Conditioning Co., Chicago, in the April issue of AMERICAN ARTISAN. Price $6.60 per case.

NAME .....

ADDRESS .....

CITY ..... STATE .....

"C" Card for "Service" Men

VIRTUALLY all types of installation maintenance and repair service on essential non-portable goods were made eligible for "C" gasoline rations March 15 by the Office of Price Administration in an amendment to the gasoline rationing regulations.

The amendment lifts the restrictions which allowed preferred mileage allowances ("C" books) only for performing structural or mechanical installation, maintenance or repair services. The amendment strikes the words "structural" and "mechanical" from the regulations.

With the production of many consumer durable goods now curtailed, it is extremely important that provision be made for keeping existing goods in operating condition, OPA officials pointed out.

The amendment, No. 35 to Ration Order 5C, is effective March 20.

American Artisan.
Gentlemen:

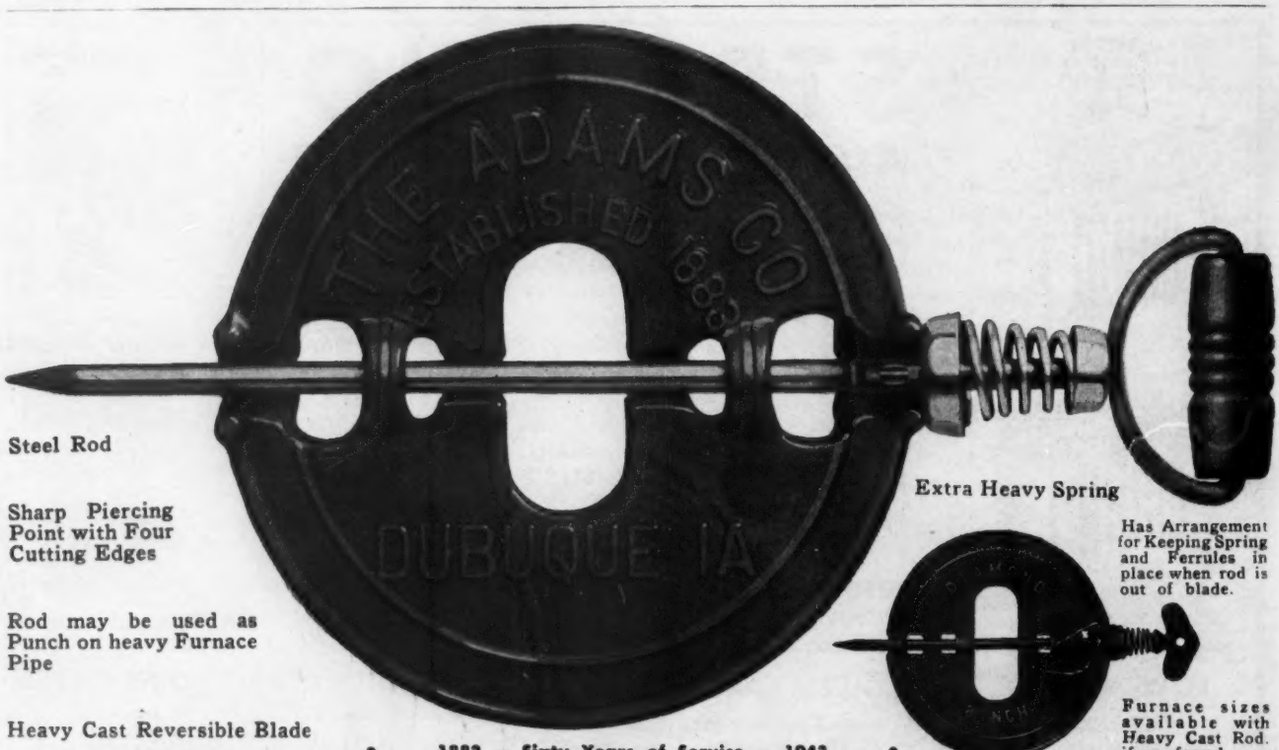
Generally speaking, the details of the Gasoline Rationing Program are so devised that a person may not be eligible for occupational mileage in excess of 378 miles per month in the gasoline shortage area or 470 miles per month in the rest of the country unless such mileage is preferred. The mileage driven in an automobile by an engineer, repair man or maintenance man for the purpose of performing structural or mechanical installations, maintenance or repair is deemed to be preferred mileage in accordance with Section 7706 (q) of the Regulations. However, mileage driven by a person while engaged in promotional, merchandising or sales activities may not be preferred under this paragraph.

Section 7706 (v) was recently added to the Regulations and provides preferred mileage to the extent of 247 miles per month for travel by certain persons engaged in selling eligible commodities. This provision is not effective in the gasoline shortage area. Building materials are among the eligible commodities listed and, therefore, a person engaged in the sale of furnaces or heating systems would fall within this classification. A person engaged in selling furnaces or heating systems might qualify for allowed mileage to the extent of 717 miles per month. If he was also engaged in the installation or servicing of such equipment so as to satisfy the requirements of Section 7706 (q), mileage driven for this purpose might be allowed in addition to any other mileage permitted an applicant. It is appropriate to emphasize again that mileage driven by a person while engaged in work which is being done for the purpose of promoting sales does not qualify for preferred mileage under Section 7706 (q).

If an applicant is dissatisfied with the decision of his local Board and feels that he is eligible for additional mileage under the Regulations, he may file a statement of appeal with the local Board within thirty days. A uniform appeal form has been devised which is available at all local Boards. We are enclosing a copy of this form for your information.

Very truly yours,

JOHN R. RICHARDS,
Chief, Gasoline Rationing Branch.



Steel Rod

Sharp Piercing Point with Four Cutting Edges

Rod may be used as Punch on heavy Furnace Pipe

Heavy Cast Reversible Blade

Extra Heavy Spring

Has Arrangement for Keeping Spring and Ferrules in place when rod is out of blade.

Furnace sizes available with Heavy Cast Rod. if preferred.

• 1883 — Sixty Years of Service — 1943 •

ADAMS DIAMOND SMOKE PIPE DAMPER
MANUFACTURED BY
THE ADAMS COMPANY
DUBUQUE, IOWA, U. S. A.

E-Z-ON

damper regulators

Cut-away of "Snap-Tite" Snap End bearing.

SPEED-UP WARTIME HEATING WORK!

You save valuable time, labor, money when you use E-Z-ONS in Wartime Housing Installations. Just a few quick blows of a hammer, and you have a smooth-operating, rattle-free job you can be proud of—even with unskilled labor!

The new E-Z-ON with the "Snap-Tite" retractable Tail Piece snaps into place instantly, without bending the damper or springing the pipe . . . Another important time-saving feature.

Your Jobber stocks and recommends E-Z-ONS for Wartime Housing. Try them NOW—for your own profit.

M. A. GERETT CORPORATION

2947 North 30th Street — Milwaukee, Wisconsin

Don't Turn Down Roof Ventilator Business

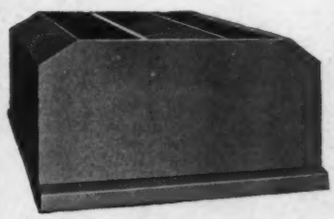
. . install

Swartwout Steel Ventilators

for critical industries requiring heat and acid resisting equipment—

or

Swartwout NCM Line



for buildings where steel equipment is not essential. Write for complete data on Swartwout Regular Line and Swartwout NCM Line.

THE SWARTWOUT CO., 18511 Euclid Ave., Cleveland, O.

Swartwout VENTILATION SPECIALISTS

Help Uncle Sam Speed Up Those HEATING PLANT CONVERSIONS

—It Means Stoker Sales for You

Oil is critical material. Every heating plant conversion from oil to coal aids the war effort. Urge your customers to get their orders in as quickly as possible. It takes time to arrange Government priorities.

GEHL Stokers

in commercial and industrial sizes meet the need for conversion in apartment buildings, office buildings, public buildings, warehouses, factories, stores, schools and churches.

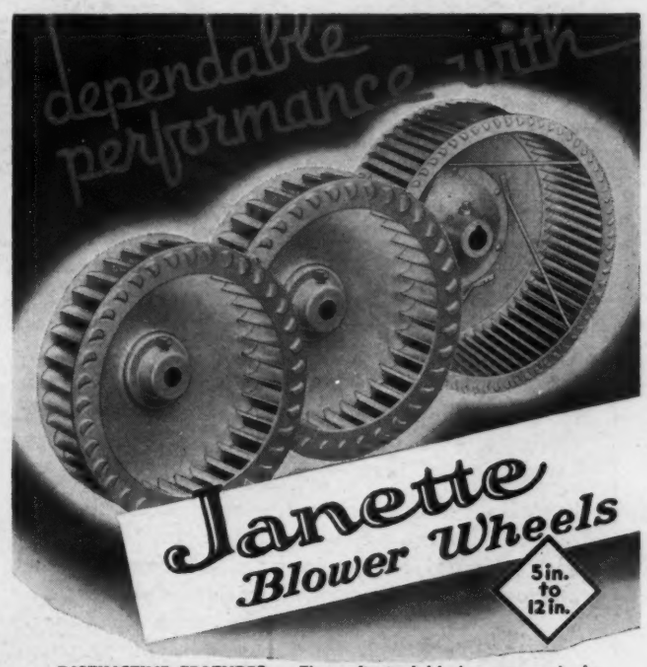
The Gehl is built to give more years of trouble-free service. Rust-resisting, all-cast chassis, fuel-saving air governor and other advantages.

Write for catalog and our plan of full dealer cooperation.

GEHL BROS. MFG. CO.

Established 1867 — Dept. BD-800 — West Bend, Wisconsin

A GEHL WINS FRIENDS WHEREVER IT GOES



DISTINCTIVE FEATURES — The soft steel blades are made in pairs, pressed thru slots in the heavy steel back plate, then welded to the plate. The blade tips are pressed thru slots in the inlet disc then bent back against the spring of the steel blades. This ***patented construction*** results in an exceptionally rigid wheel and ***prevents loose blades,*** as no rivets are used in fastening the blades. The heavy cast iron machined hub is riveted to the back plate and will not crack or become loose on the shaft.

Janette

Janette Manufacturing Co. · 556-558 W. Monroe St. · Chicago, Ill.

THE BEARINGS WE MAKE FOR WAR . . . ARE THE BEARINGS WE MAKE FOR PEACE

For over a third of a century Randall has been making increasingly efficient, trouble-free bearings. It is this known quality of dependability that has brought us orders for bearings for almost every kind of war production equipment and for many jobs in actual fighting machines.

When peace is won you can get this fine quality in the bearings you need wherever shafts turn. Write now for catalogs 43 and GB 43.

RANDALL GRAPHITE PRODUCTS CORP.

Dept. 411 609 W. Lake St. Chicago, Ill.

ATH-A-NOR

The Aggressive Dealers Choice

ALWAYS

Yes, Ath-A-Nor Furnaces have been the choice of aggressive dealers for over 50 years, and will continue to be, after the duration when business returns to "as usual."

For the duration when furnaces MUST be replaced, use an Ath-A-Nor. You can be certain that it is the utmost in quality, economy and efficiency . . . will perform perfectly and assure you of a satisfied customer . . . and remember, collect all scrap metal and see that it reaches our government as speedily as possible.

MANUFACTURERS OF QUALITY HEATING EQUIPMENT FOR OVER 50 YEARS

MAY-FIEBEGER COMPANY

NEWARK OHIO

Simpler—But Better Gravity Systems

(*Continued from page* 38)

volved in (6) in order to obtain L, the equivalent length of single duct replacing the system,

$$L = \frac{D^5}{2.548}. \qquad (7)$$

D is the diameter of the single duct having the same cross-sectional area as the sum of $A_1 + A_2 + A_3$.

In the case of duct system R-3,

$$A = \frac{1}{144}(314 + 314 + 226) = 5.93 \text{ sq. ft.}$$

$$D = \sqrt{\frac{4 \times 5.93}{\pi}} = 2.75 \text{ ft.}$$

Substituting in Equation (7)

$$L = \frac{(2.75)^5}{2.548} = 62 \text{ ft.}$$

This length of 62 ft. is shown as the equivalent length for system R-3 in Fig. 5.

The values given in Equation (6) can be used to estimate the percentage distribution of air volume between the three return-air ducts in Installation R-3, as follows:

$$Q_2^2 = \frac{3.78}{6.18} Q_1^2 \text{ or } Q_2 = 0.783\, Q_1 \qquad (8)$$

$$Q_3^2 = \frac{3.78}{8.89} Q_1^2 \text{ or } Q_3 = 0.653\, Q_1 \qquad (9)$$

The total air volume

$$= Q_1 + Q_2 + Q_3$$
$$= Q_1 + 0.783\, Q_1 + 0.653\, Q_1 = 2.436\, Q_1. \qquad (10)$$

The calculated values for the percentage distribution of air volume for the three ducts are:

$$\text{West} = \frac{1.0}{2.436} \times 100 = 41.0 \text{ per cent}$$

$$\text{South} = \frac{0.783}{2.436} \times 100 = 32.2 \text{ per cent}$$

$$\text{East} = \frac{0.653}{2.436} \times 100 = 26.8 \text{ per cent}$$

Total 100.0 per cent

The corresponding values for the actual percentage distribution of air volume, as determined by anemometer traverses* in each of the return ducts, were:

West = 38.0 per cent
South = 33.9 per cent
East = 28.1 per cent

Total 100 per cent

The maximum deviation between the calculated and actual percentage distributions was only 3 per cent. In the case of Installation R-4, the maximum deviation was 4.1 per cent.

*Univ. of Ill. Eng. Exp. Sta. Bul. 189, p. 69.

Kruckman — Nugent's Plan

(*Continued from page* 21)

$12,000 per year, to "determine the quantities of food, clothing, shelter, fuel, transportation and medical supplies necessary to keep the civilian population healthy and functioning effectively"; and to determine what manufacturing facilities, supplies, are "necessary for civilian industries, trades, and services to produce and distribute goods and services necessary to keep the civilian population healthy and functioning effectively. . . . Government agencies shall allocate to the Administrator resources essential to keep the civilian population healthy and functioning effectively. . . . Conserve . . . civilian production and distribution by reducing, eliminating, or standardizing nonessential uses of goods, services and productive resources"; and this is the section that has aroused much comment:

"(the Civilian Supply Administrator) shall direct the smaller War Plants Corporation, the Commodity Credit Corporation, or the Reconstruction Finance Corporation and its subsidiary corporations *'TO BUY AND SELL* civilian goods or enter into contracts for the manufacture of civilian goods,' or extend loans to business concerns, whenever such action is necessary to achieve one of the following purposes: building up adequate reserves of civilian goods; distribute civilian goods from an area of surplus to an area of extreme need."

The Bills, if enacted into law, would clearly empower the Civilian Supply Administrator to establish factories, warehouses, wholesale jobbing houses, and retail stores to sell *anything* used by any citizen at any place. It bestows the power to create a chain of producing units and of large and small selling units everywhere, by the Government, purely for civilian needs. The law, apparently for the duration of the war, would integrate manufacturer, jobber, wholesaler and retailer of almost every description, at the will of the Administrator, into a tightly standardized civilian controlled economy. It would provide for expiration of the law six months after the war has ended.

Under the terms of the Bills the Administrator would be appointed by the President by and with the consent of the Senate and would be responsible to the Director of Economic Stabilization, James F. Byrnes. The ultimate power thus is vested in the Economic Stabilization Director. Joseph L. Weiner, head of the present Office of Civilian Supply in WPB, appeared before the Senate Banking and Currency Committee and vigorously urged the enactment of the Bill. He was accompanied by a large group of persons from his office and from other agencies. Most of his companions are well known for their radical opinions.

These people honestly believe that it is essential to squeeze our industries, to strip them of all but the absolutely necessary functional parts, and to simplify and concentrate and standardize our ways of life to the ultimate limit in order to prepare us for the discipline to come after the war which they deem necessary to an eventually better life. It is generally understood Weiner wrote the bill and that the bill has the approval of Donald Nelson, J. A. Krug, Prentiss Brown, Claude R. Wickard, Ezekiel Mordecai, Paul V. McNutt, and other persons usually associated with the New Deal.

BURT STANDARD GRAVITY **VENTILATOR**

Efficient
Simple
Rugged

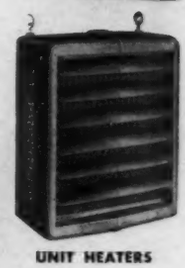
Here is a Burt Ventilator that has proved consistently popular for many years. With good reason, too, for "Standard Gravity" is efficient, adaptable to a wide range of applications, quality made, and priced to give unusual value. Burt makes a complete line of roof ventilators of advanced design with which you can compete to advantage for public or private work.

THE BURT MFG. CO.
ROOF VENTILATORS • OIL FILTERS
EXHAUST HEADS
801 Main St., Akron, Ohio

SEND FOR CATALOGS
Burt Engineers are glad to help on plans

"We Do a Nice Volume Now—Thanks to CLARAGE EQUIPMENT"

War plants, army barracks and other vital war-time buildings need heating and ventilating, or exhaust and blow pipe installations. This high priority business can be your salvation. Specify Clarage Fans, Blowers, Unit Heaters! Nationally known and Nationally accepted, these highest quality air-handling products help you land the desirable jobs. **Write today for descriptive literature.**



UNIT HEATERS

EXHAUST FANS

VENTILATING FANS

COMPLETE AIR CONDITIONING • COOLING • VENTILATION • FACTORY HEATING • MECHANICAL DRAFT • FANS and BLOWERS for INDUSTRIAL NEEDS

Clarage Fan Company Kalamazoo, Mich.
APPLICATION ENGINEERING OFFICES IN ALL PRINCIPAL CITIES

KEEP 'EM FIRING

with Gar Wood

★ Self-Contained Forced Warm Air Automatic Oil-Fired Heating Units. (from 50,000 to 500,000 B.T.U./Hr.)

★ Industrial Space Heaters up to 500,000 B.T.U./Hr.

★ Boiler-Burner Units up to 25 HP.

Some Distributors and Dealers are receiving Government business for Heating Equipment. If you are one of those who are called upon to submit estimates, heating plans and surveys, we suggest you enlist our cooperation and our engineering service.

Write today for "ENGINEERING STANDARDS"—this valuable 72-page book on Engineering, Installation and Operation of Heating Systems, sent free on request to Sheet Metal Contractors and Dealers, Engineers and Architects. This offer made for a limited time only. Address reply to Dept. 14

HEATING DIVISION

GAR WOOD INDUSTRIES, INC., DETROIT

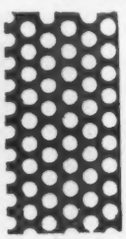
Protect Freedom—Buy War Bonds

PERFORATED METALS

ARE ESSENTIAL

In Times of War and Peace

They are used in the manufacture of explosives and ammunition, flame arresters, airplanes, battleships and in many important and essential industries such as the processing of grain, food products, chemicals, metals, coal, petroleum, etc. We make all sizes and shapes of holes to meet the most exacting conditions.



The Harrington & King PERFORATING Co.

5649 Fillmore St., Chicago, Ill. New York Office, 114 Liberty St.

New PD-1A Application Form

(*Continued from page* 23)

rating is not high enough so the P-84 order would be shown on the request as the customary source of supply, but unavailable because of a too low rating.

Item 15 refers to capital equipment which the information on PD-1A defines as machinery, equipment, or other implements of production ordinarily acquired as a capital asset not for resale. In other words, PD-1A might be used to obtain a shear which is a piece of capital equipment. Sections *a* and *b* of Section 15 are self-explanatory.

Note that subsection *c* of Section 15 asks for a listing of similar equipment which you already have and there is a box which should be filled in as explanation of how you do the work for which you are requesting a machine. For instance, if you have a foot-operated shear and are applying for a power-operated shear, you would explain how the foot shear is not "heavy" enough to shear sheets which you are now cutting up for production.

Section *d* under Section 15 wants to know what you will do with the equipment you are replacing. Section *e* is a further attempt by WPB to determine whether or not you actually need the piece of capital equipment being applied for.

Section 16 asks for a delivery date required and WPB asks that you give the actual delivery date required and not specify "at once" or "as soon as possible," which is indefinite.

Form PD-1A (5-10-42)

16. A rating is requested on the items below, total value of which is $
(Required delivery dates must be specific except where material is for export)

17. Quantities of these items in inventory (exclude capital equipment)

(a) List Each Item of Equipment or Material. Use Purchase Order Description in Full. (Include Weight in Pounds if Requesting Raw Material)	(b) Value Each Item	(c) Total Quantity Each Item	(d) Items Each Shipment	(e) Required Delivery Date(s) Month	Day	Year	In Stock and/or On Hand for Delivery From Used Equipment on This Request	Will Last How Many Months

18. THE UNDERSIGNED HEREBY CERTIFIES that he is authorized to execute this application on behalf of the applicant; the quantities and required delivery date(s) specified are not greater nor earlier than necessary for completion on time of above specified contract(s) or order(s); the facts herein set forth, or appended, are true and correct to the best of his knowledge and belief.

SIGN HERE

(Legal Name of Applicant) By: (Signature and Title of Official) (Date)

Section 35(A) of the United States Criminal Code, 18 U. S. C. Sec. 80, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

DO NOT WRITE BELOW THIS LINE

The facts presented do not warrant the release of critical material urgently needed for the war effort and your application is accordingly DENIED.

(Signature) (Division)

PREFERENCE RATING CERTIFICATE

The preference rating herein assigned does not constitute an exemption from any duly promulgated limitation or conservation order. The following rating is assigned to the items in the quantities quoted in number 16, column C, above:

Sections *a* of Sections 16 and 17 are for an itemized reproduction of your order showing the value, quantity, delivery date, present inventory and so forth, and should be filled in as completely as possible.

In Section 18, the signature of certification is placed on the duplicate only and is not required on the original or on the triplicate.

At the bottom of page 3, there is a space for WPB to either deny or approve the application and if approved to indicate the preference rating which is assigned. WPB emphasizes that the preference rating assigned by the certificate may be extended only for the kinds and quantities of material authorized. In no event shall the contract or purchase order to which the rating is applied call for a delivery prior to the required delivery date specified.

If your application is approved, you keep the certificate, in other words, the PD-1A form which is returned to you with the priority number indicated is extended to your supplier; and the supplier in turn extends the preference rating assigned on the PD-1A to the purchase order in accordance with Priority Regulation No. 3, by executing and transmitting to the supplier by endorsement on the purchase order or other equivalent document the form of certification as follows:

> "The undersigned purchaser hereby represents to the seller and to the war production board that he is entitled to apply or extend the preference rating indicated opposite the item shown on this purchase order and that such application or extension is in accordance with Priorities Regulation No. 3, as amended, with the terms of which the undersigned is familiar."

For the purposes of a PD-1A, a "product" means that which is produced from the material or the capital equipment or the service which is rendered by the use of the material for which a rating is requested, and: Material means raw material or semi-finished or finished products, but not including capital equipment.

PD-1A may not be used by distributors, jobbers, wholesalers or retailers, except when requesting a rating for maintenance, repair and operating supplies used in their own establishments. These persons must use PD-1x when requesting a rating on material purchased from producers for resale in the same form in which purchased.

◆

Defense House Heating

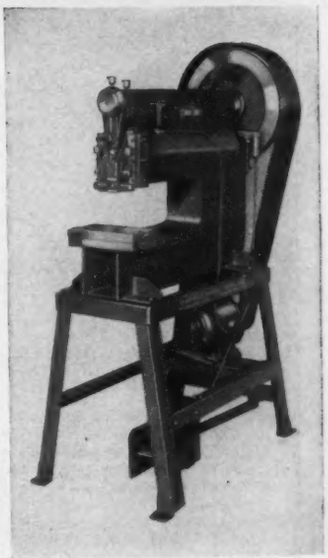
(*Continued from page* 34)

"An interpolation between the operation observed in Tests 2 and 4 with anthracite coal indicates that about 7.5 lbs. of anthracite coal could be burned per hour with an average stack temperature of 850°F. An average CO_2 of 11 per cent could be expected which would result in an indirect combustion efficiency of about 71 per cent. An output of about 67,000 Btu per hour is indicated for this operating condition with anthracite coal.

"The bimetallic draft controller operated satisfactorily in maintaining a steady temperature at the smokehood. The indirect result of this action was a reasonably steady temperature on all of the heating radiating surfaces of the heater and a nearly steady heat output."

WHITNEY-JENSEN PRODUCTS
30 YEARS EXPERIENCE

Heavy Duty Motor-Driven PUNCH PRESSES



Economical machines for powerful, accurate, durable service. Many safety features. Capacity 10 tons, length of stroke, 1¼", stroke adjustment 1¾", die space 6". Comes in two sizes, 12" and 18" throat depths. Welded steel frame and welded angle iron stand. All parts accurately machined. Flywheel at rear, out of way of work. Built-in motor drive and push-button controls.

Write for new Whitney-JENSEN Aircraft Tools Catalog

WHITNEY METAL TOOL COMPANY
91 FORBES ST. • ROCKFORD, ILL.

U.S.No.400 TRUSSTEEL

Matching Cold Air Face No. 405

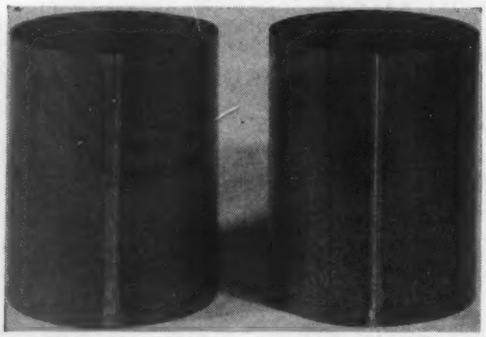
A new heel-proof maximum-free-area gravity register of sturdy construction with multiple valves running short way for easier operation, cleaner walls. Natural wood finish and other Standard Finishes.

UNITED STATES REGISTER CO.
BATTLE CREEK, MICHIGAN
Minneapolis Albany
Kansas City

Producers of Gravity, Air-Conditioning and Ventilating Registers, Grilles, Pipe, and Fittings. Write for 41G, 41AC, and 41F Catalogs.

BLACK IRON Soldered

WITH SUBSTITUTE SOLDER!



Sweat job used ordinary flux. Note uneven flow of solder—mealy appearance.

Sweat job using LYTESTONE Flux. Note even flow of solder—homogeneous appearance.

LYTESTONE Soldering Flux is compounded to give maximum action in removing surface oxides.

LYTESTONE has a powerful scavenging action on substitute solders—absolutely necessary where tin content has been reduced.

LYTESTONE is a concentrate powerful enough to solder on *black iron.*

LYTESTONE Flux lowers surface tension of molten solder—increasing fluidity of the metal—causing it to spread rapidly.

LYTESTONE does not oxidize under higher heat necessary for substitute solders—flux residue reduced to a minimum.

LYTESTONE can be carried on top of metal bath for dip soldering.

Sample gallon only $1.75 F.O.B.

FARRELLOY COMPANY, INC.

1241 N. 26th STREET PHILADELPHIA, PA.

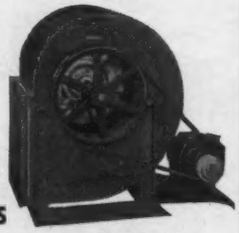
Makers of FARCO Fluxes for soldering, welding and brazing.

Consult us if you need U. S. Specification Fluxes.

YOUR BLOWER Requirements

AVAILABLE AT

Schwitzer-Cummins Company



★ **BLOWERS FOR EVERY PURPOSE**

Double Inlet and Single Inlet

HY-DUTY Blowers, 9¾" to 25" • Top and Bottom Horizontal, and Top and Bottom Vertical Discharge • Top and Bottom Motor Mounting • Dual Units also available.

★ **CENTER DISC WHEEL**—Double Inlet, Double Width • Reinforced Center Disc • Designed for Modern Air Conditioning and Heating Applications • Sizes, 4½" to 50".

★ **ENGINEERING DATA**—Write for Catalogues showing complete Performance Data • Experienced Engineering Department available to help solve your Air Handling Problems.

BLOWER DIVISION

SCHWITZER-CUMMINS COMPANY

1145 EAST 22ND STREET INDIANAPOLIS, U. S. A.

Michigan Convention

(*Continued from page* 54)

tenance work. There will be sufficient cast iron and steel for all types of repairs for existing heating systems; there will be sufficient sheet for necessary blowpipe, ventilating and similar industrial and commercial systems; there will be sufficient material for all kinds of replacement parts.

Discussing some specific problems which have developed, Mr. Easton announced that all PD-3a applications involving more than $500 must be approved and reviewed by local WPB offices after March 1st. In case of necessity an appeal can be filed with the Regional Office over the head of the District Office. In granting priorities on appeals, the District Office may grant an AA-2x and the Regional Office can go as high as AA-2.

Mr. Easton also explained REMP (Regional Emergency Materials Plan), which is a "kitty" of critical materials which the Regional Office may distribute in small quantities in case of urgent need where a lack of such materials may cause a shut-down in vital operations.

After April 15, local WPB offices will screen PD-1A's and those which can not be decided by the local office will be passed along to Washington, but it is hoped that practically all PD-1A's can be passed upon by the local office. After April 15, the old type PD-1A will not be accepted—as announced in AMERICAN ARTISAN in the March issue, a new form of PD-1A is now available for use. It is hoped that the new PD-1A can be processed in the local office within 24 hours' time.

Mr. Easton explained that under CMP any contractor making products which the contractor *sells as items* should obtain material for these items under the Controlled Materials Plan classification 4-B regardless of the value of work. The application should be made on a form obtained from WPB and should cover material requirements for a period of three months.

The two speakers also attempted to clarify the situation regarding materials for maintenance and repair. They explained that for such repairs as furnaces, gutters and down spouts, etc., where the repair parts or items are purchased from a jobber, the contractor should extend the A-10 rating of Order P-84 to the jobber. The jobber in turn will obtain his items from the manufacturer under the Jobber's Order PD-1x. This arrangement makes it possible for the contractor to extend low ratings and for the jobber to use high ratings to obtain materials.

The contractor who fabricates items for resale, or the manufacturer of similar items which he sells to a jobber for distribution to the contractor should obtain his materials to manufacture the product under the Controlled Materials Plan allocation system.

Contractors need not extend each small order carrying A-10 under P-84 to the jobber but should accumulate these small orders until such time as the contractor can order a quantity which gives him a commercial discount. Thus P-84, A-10 orders can be accumulated for several weeks and then a volume order can be placed with the jobber.

War Manpower Commission

Area Director Patten explained how the State of Michigan is divided into areas for the purpose of operation of the War Manpower Commission order covering labor. These areas are so divided that one

type of area has a labor scarcity or impending scarcity, while other areas have a labor surplus.

Mr. Patten reported that at the present time the turnover in all branches of construction industry is running at 20 per cent and absenteeism is running at 25 per cent. It is the expectation of WMC that when the employment service is completely operating, this shifting of jobs will be largely eliminated and mechanics will find it impossible to quit a job without proper authority and find a job at some other plant. There will, of course, be logical reasons why a mechanic should quit a job, but the reasons will have to be good and eventually it is expected labor will be stabilized. To make this plan fully operative, employers must agree not to recruit labor from other industries, including essential civilian industry.

Sheet Metal Workers Frozen

Certain classes of employees are now prevented from shifting jobs without authorization by WMC employment service. Probably the only such classification affecting our industry is sheet metal layout men. Any sheet metal layout man (in a critical labor area) who wishes to change jobs must now consult U. S. Employment Service and must obtain a release from his present employer before he can obtain another job.

It was disclosed that if a sheet metal shop owner wants to be deferred for good reasons, he should file 42-A for classification 3-B when the owner comes up for re-classification before his draft board.

Detroit-Kalamazoo Bowling

A three-year standing bowling competition between Detroit and Kalamazoo went into its third game, with Detroit rolling 2,323 and Kalamazoo rolling 2,208. The series now stands two games for Kalamazoo, one game for Detroit.

◆

Cummings' Summer Service

(*Continued from page* 35)

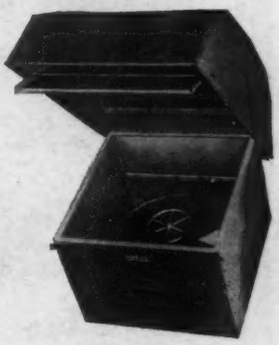
For those customers and prospects who are not familiar with the service, the back of the letter shows the ten items rendered on a stoker or stoker-furnace unit. The items on an oil burner service are quite similar.

One reason this service plan has been profitable is indicated on the customer's acceptance slip, which specifies that the job shall be done on a "route service schedule" with the customer notified the day before hand. This permits a group of jobs to be done at one shift of crew and equipment, thus saving time, tires, gasoline. This feature of the plan will be even more important this year than ever before.

This year the firm is rounding out its service by taking on a line of furnaces and the oil burners and stokers offered by the same furnace manufacturer. Thus the firm will be in a position to make replacements where repair cannot keep the old furnace going.

ALLEN POWER ROOF VENTILATOR
Meets War Requirements

Now available with housing built of non-critical materials; specially prepared, plywood, masonite and others.



The ideal "Blackout" ventilator! No loss of valuable war production time during blackouts because of inoperative ventilation equipment.

Low power consumption. Exhausts large volume of air with comparatively small motors. Wide range of sizes; capacities 5,600 c.f.m. to 45,000 c.f.m.

Ford Willow Run plant completely equipped with Type "H" ventilators.

Gives a Quick Lift to War Production Work!

Recommend it to your customers. Our engineering department will help. Send for literature.

The ALLEN Corporation
9749 Erwin Avenue — Detroit, Michigan

WHITNEY LEVER PUNCHES

No. 4B PUNCH

Length 8¼ inches. Capacity ¼-inch through 16 gauge. Deep Throat—2 inches. Weight—3 pounds. Punches and Dies—⅛" to ⅜" by 64ths.

No. 91 PUNCH

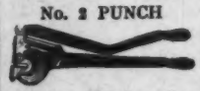
CAPACITY

½-inch hole through ¼-inch iron; ¾-inch hole through ⅜-inch iron; 2-inch hole through ⅛-inch iron. Depth throat, 5 inches. Weight, 32 lbs.

No. 1 PUNCH

Length — 34 inches. Capacity — ⅜-inch hole through ⅛-inch iron. Punches and dies in sizes from ⅛ to ⅜ by 64ths.

No. 2 PUNCH



Length — 23 inches. Capacity — ⅜-inch hole through ⅛-inch iron. Punches and dies in sizes ⅛-inch to ½-inch by 64ths.

No. 6 PUNCH

Length—36⅛ inches. Capacity — ¼-inch hole through ⅜-inch iron; especially adapted for button punching or templet work. Punches and dies ⅛" to ⅜" by 32nds.

We have tools for every purpose needed by Sheet Metal Contractors.

Ask your Jobber.

CHANNEL IRON PUNCH

Companion to No. 2 Punch. Every part of the two Punches Interchangeable, including punches and dies. Capacity—¼-inch hole through ¼-inch iron.

W.A. WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

Who has a Chimney that is easy to install—is absolutely safe to use—has an excellent draft—with the added virtue of long life with practically no maintenance costs?

The Condensation Engineering Corporation has such a Chimney—The VITROLINER Chimney. It is a vitreous enameled steel Chimney with Fyrex asbestos insulation.

Over 14,000 Vitroliner Chimneys are now in use in Defense Houses.

Vitroliner pipe is also used for lining Masonry chimneys, for oil or gas-fired heating units.

Vitroliner Vent pipe can also be used in chimney furnaces.

For further details write to

CONDENSATION ENGINEERING CORP.
2515 ARCHER AVENUE • CHICAGO, ILL.

★ ★ ★

For

Victory

★ ★ ★

Buy

UNITED STATES

WAR SAVINGS BONDS

and

STAMPS

More Machines On Fan and Motor

(*Continued from page* 43)

vious system curve "C" represents this condition, therefore, a fan speed of 1400 RPM and 10.9 BHP as previously calculated would result.

Method (c)

A recalculation of the static pressure of the system on the basis of method (c) will give a value of approximately 8-inch static pressure without enlargement of the main duct sections, represented by system line "D" and would require a fan speed of approximately 1515 RPM and 13.0 BHP. This also requires enlargement of the main duct and collector to reduce the fan speed and BHP back down to within this overload value of the present motor, which is 11.5 BHP.

Method (d)

This method (d) will not show any material improvement over the previous methods and would likewise require enlargement of the main duct line and size of collector to keep within the 11.5 HP motor load. The method of analysis is the same as the previous discussions.

Method (e)

This method is adaptable where the new machines can be located close to the fan and connected into the main section adjacent to the fan inlet. In this manner the system resistance for the duct system up to this main duct section at fan inlet will remain unchanged because it will be handling the same original volume, thus static pressure at beginning of section "F" will remain at 4.28 inches by adding values in resistance tabulation for sections K, B, C, D and E. The balance of the system will be handling 5600 CFM instead of 4000 CFM, so the remaining SP value of 2.22-inch will increase as the square of the volume ratio, or $(5600 \div 4000)^2 \times 2.22$ equals 4.35-inch static pressure, and the total static pressure of the new system results at 8.63-inch SP, using the original collector. This method compares about the same as methods (c) and (d), consequently a portion of the main duct must be enlarged, as well as a larger collector sized for 5600 CFM.

Collector

The resistance across the collector will vary as the square of the entrance velocity values. A system that has been correctly designed for 4000 CFM and then called upon to handle 5600 CFM means that the drop across the collector will be double the original resistance of that collector. This is a volume increase of 40%. Good practice would suggest that the collector be replaced by a larger one sized for the 5600 CFM volume.

SAL-MO SUPPLY DUCT

The New Non-Metallic Material for constructing Supply and Return Lines for Warm Air Heating and Air Conditioning Systems. Write:

SALL MOUNTAIN COMPANY
176 W. ADAMS ST. Dept. K CHICAGO, ILL.

Payne FURNACE & SUPPLY CO., INC., BEVERLY HILLS, CALIFORNIA

SPOT WELD
WITH AN
ACME "Hot Spot" WELDER

Proven utility for over 26 years in thousands of sheet metal fabricating plants.

Write for Literature and Prices.

Complete Range of Sizes

Lifetime Guarantee!

ACME ELECTRIC WELDER CO.
2618B Fruitland Road Los Angeles, Calif.

BB
HOOKS AND HANGERS

THRU LEADING JOBBERS EVERYWHERE

BERGER BROTHERS CO.
Main Office & Factory
229-237 Arch St. Philadelphia, Pa.

AXIOM AIR FILTER

- The result of fifteen years experience
- Lower in cost — Higher in quality
- Huge dust capacity—low resistance
- Prompt delivery assured

Order now

BLOCKSOM & COMPANY, MICHIGAN CITY, INDIANA

NEW LECTRO-SHEARS
Cut Metal, Faster, Easier

Black and Decker's new, redesigned Portable Lectro-Shears cut all types of sheet metal quickly, accurately . . . on a radius as small as ¾". Cutting operation always visible. New, improved operating handles provide better balance, easier control on curves and irregular lines. Cut up to rated capacity in steel, galvanized iron . . . 50% greater in non-ferrous metals. Ball-bearing equipped. Universal motor, designed for high speed, trouble-free service. Two sizes—18 and 16 gauge. No. 16 handle equipped with instant release trigger switch and locking pin for continuous operation. See your Black and Decker Distributor, or write direct to: The Black & Decker Mfg. Co., 782 Penna. Ave., Towson, Md.

Leading Distributors Everywhere Sell

Black & Decker
Portable Electric TOOLS

New and improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

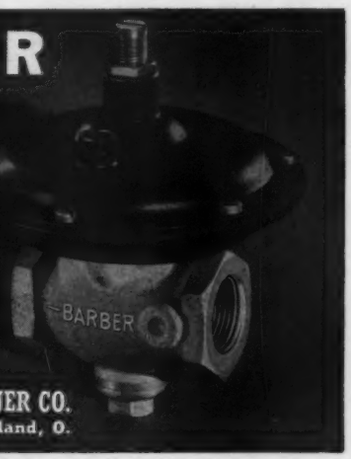
"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Std. Arr. No. 1 for Belt Drive

Write us about your problems. Send for Bulletin No. EX-41

BAYLEY BLOWER COMPANY
1817 South 66th Street Milwaukee, Wis.

BARBER
Gas Pressure REGULATORS



Sizes ¼" up

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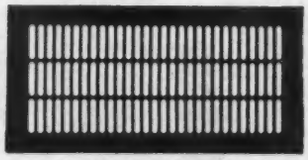

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Distributors of All Heating and Air Conditioning Equipment
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Conclusion

This particular example probably represents about the maximum system increase for which one would endeavor to utilize the original exhaust fan and motor, unless the original equipment were sufficiently oversize for the express purpose of providing future substantial expansion to the system. The method of study would be logical for system changes to any existing installations, however, and is offered for this purpose.

◆

If You Have Blowers — Sell Them

(*Continued from page* 31)

bustion engines; and (v) critical turbo-blowers as defined by Limitation Order L-163, as amended.

(4) "Dealer" means any person who purchases fans or blowers for resale; except sales and distribution outlets controlled by a manufacturer, and except persons who purchase fans or blowers solely for resale as a component part of a boiler, pulverizer or stoker.

(7) "Approved order" means:

(i) Any order for a fan or blower bearing a preference rating of AA-5 or higher; or

(ii) Any order for a fan or blower which the War Production Board approves pursuant to subparagraph (b) (3) hereof.

(b) *Restrictions on acceptance of orders for, and delivery of fans and blowers.* (1) After February 28, 1943, no manufacturer or dealer shall accept any order for a fan or blower unless the order is an approved order; and after March 31, 1943, no manufacturer shall deliver any fan or blower in fulfillment of any order unless the order is an approved order.

(2) The limitations and restrictions of paragraph (b) (1) above shall not apply to any order for repair parts (i) in an amount not exceeding $500 for any single fan or blower, or 50% of the original sales price of the fan or blower to be repaired, whichever is less in any particular case; or (ii) in any amount, for the repair of a fan or blower when there has been an actual breakdown or suspension of operations thereof because of damage, wear and tear, destruction or failure of parts or the like, and the essential repair and maintenance parts are not otherwise available.

(3) Any manufacturer or dealer may apply for authorization to deliver orders on his books which are not approved orders by filing a report thereof in duplicate on Form PD-795, together with a statement of the percentage of completion of each such order. The War Production Board may thereupon approve any such orders regardless of the rating thereof, or may rerate any such orders in order to constitute them approved orders.

Clause Permitting Fan Sales

(5) The limitations and restrictions of this paragraph (b) shall not apply to the acceptance by a dealer of any order for centrifugal type air booster, furnace fan, or underfire coal burning fans having a capacity of 2500 CFM and less, with motors of ¼ HP and less, to be delivered for use on or in connection with a furnace.

New York Convention

(*Continued from page* 56)

tional material has been allocated for grates. Within a very short time Class A stokers probably will be delivered in ten days time and grates can be delivered in 8 weeks after receipt of order.

The Heating School

Last year at the New York convention, Professor Lorin G. Miller of Michigan State College conducted a one-session short course in heating and this proved so popular that Professor Miller was invited again this year to present a similar course. He did so, using a prepared small house layout and the technical code data sheet and precalculated heat loss figures. Under Prof. Miller's guidance, the heating system for the house was laid out and sized to meet the conditions imposed by present war restrictions. It is not possible to present in this report a complete discussion of Prof. Miller's program, but the general basis for the procedure followed closely the suggested procedure from the Technical Code, which has been presented in many past issues of AMERICAN ARTISAN.

Substitute Ducts

A very interesting session was devoted to a discussion of substitute duct material as presented by J. J. Mayer of the Philip Carey Manufacturing Company. Mr. Mayer emphasized that so far as Carey materials are concerned, it is not the intention of the producer to replace sheet metal, but that there are certain conditions of installation which make it both feasible and economical to use substitute materials in place of galvanized iron even under peace conditions. For example, many ducts must be sound insulated and the substitute materials do an excellent job of sound absorption. Also, many ducts must be insulated against heat loss or heat transfer and again substitute materials do an excellent job of heat control.

A third instance is where the ducts must carry air at a very high velocity which may result in sound production with sheet metal, but in substitute materials a considerably higher velocity may be carried without any noise.

Mr. Mayer emphasized that up to date, at least, substitute materials have been too expensive for direct competition with mill-run sheet metal work. These Carey ducts are now made in 42 sizes at a production rate of approximately 8,000,000 square feet per year. At the present time orders carrying priority ratings of AA-1 must take from 4 to 8 weeks for delivery.

As to cost, a rule-of-thumb might be that prefabricated Carey ducts are approximately twice as expensive as uninsulated sheet metal; on very large duct jobs using large sizes of ducts, cost records show that the substitute material ducts cost approximately 40 per cent more than sheet metal. In general, the labor cost of fitting and erecting Carey duct is approximately one-half of the material cost, or if the material costs $100, $50 is required for two men to erect and one man to cut the Carey duct.

Mr. Mayer explained that the Carey duct is shipped as prefabricated sections and are cut and put together on the job. Fittings, of course, are all at right angles, using Ducturns to eliminate turbulence.

The Carey company also has another board product called "Careyboard" which is delivered as flat sheets or may be delivered as completely prefabricated-to-

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STOVES—FURNACES—BOILERS
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★War Time Trade News★

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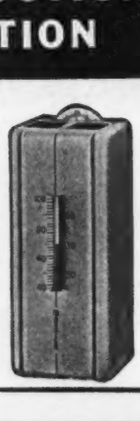

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2368 University Ave., St. Paul, Minn.

Sam P. Burgess, Rock Island Register Co., Rock Island, Illinois, reports that Edwin M. Burgess, Estimator and Service, is now Tech. Sargeant, 1st Btn., 1st Reg., Fort Bragg, N. C.

Employees are purchasing war bonds about 90 per cent.

Marion I. Levy, President, Viking Air Conditioning Corporation, Cleveland, reports considerable new equipment installed in their plant, including a large double crank press with a 30x48 bed; additional welding equipment and complete tooling and machines facilities.

Present business is now 100 per cent war work with backlog over 90 per cent AA1. The company has just completed a prime contract for the Engineers Corp on parts for pontoon bridges. They are now making a large number of heat treated aluminum parts and welded assemblies for the new Corsair Navy fighter plane. For quite some time they have been making tank parts for the M-4 tank—materials ranging from 16-gauge to half-inch plate.

Frank P. Gibbons, formerly assistant sales manager on fans and blowers and humidifiers, has very successfully taken over the purchasing—it now requires more selling ability to purchase successfully than it does to secure business.

The company flies the Treasury Minute Man flag with the special 10 per cent emblem indicating that all employees purchase at least 10 per cent of their earnings in war bonds on a payroll deduction plan.

Acme Electric Welder Co., Los Angeles, California, advises that Robert J. Levyn, partner and office manager, is now a sergeant in the Finance Department of the Army Air Corps, stationed at Williams Field, Arizona.

The company is building spot welders for Army, Navy, Air Corps, Lockheed, Vega, Vultee, Douglas, North American Aviation, Consolidated, etc. — Stanley M. Levyn.

Penn Electric Switch Co., Goshen, Indiana, received the Army-Navy "E" award on March 5 for proficiency in war production.

Comdr. James S. Laidlaw, U. S. N., Bureau of Ordnance, Washington, presented the award and revealed to employees that they through their production efforts were responsible for five enemy planes which attacked a convoy bound for Russia. One of the vessels listed five enemy planes downed with Navy guns equipped with firing apparatus manufactured by Penn. Albert F. Penn, President, accepted the award.

Major Joseph G. Wood, Officers Procurement Div., Indianapolis, presented "E" pins to four selected employee representatives.

Congressman Robert A. Grant, Member of the House of Representatives Naval Affairs Committee, made a stirring address on absenteeism in war industries.

Ilg Electric Ventilating Co., 2850 N. Crawford Ave., Chicago, has been awarded the Army and Navy "E." Presentation was made on February 11, by Lt. Comdr. T. H. Urdahl, USNR, Bureau of Ships, Washington, and accepted by John M. Frank, President of Ilg. Presentation of Production Workers Emblem of Excellence was made by Major Lauris Eek of the U. S. Army Air Force and accepted on behalf of employees by a typical Ilg man and a typical Ilg woman representing all employees.

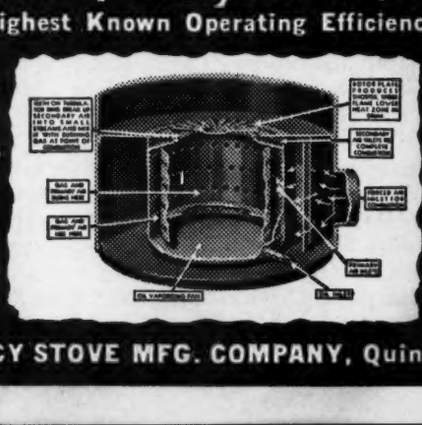
Fifty-three Ilg men are now in the armed forces. Herbert Dreesbach was killed in action at Pearl Harbor on the Battleship Arizona.

Adrich Company, Wyoming, Illinois—L. I. Aldrich—reports that 100 per cent of their business in burner units consists of war orders. 2,402 units were on order March 1, 1943. They have added some equipment to handle these orders.

Famous Patented Monogram Vaporizing Burner Provides Highest Known Operating Efficiency with Oil

Full Forced Winter Air Conditioners

Booster Gravity Units



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Automatic Water Heaters

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Commission

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The company
roll deduction

★War Time Trade News★

U. S. Machine Corporation, Lebanon, Indiana—manufacturers of Winkler stokers—received the Army-Navy "E" flag on February 24th. Col. F. A. McMahon, Chief, Cincinnati Ordnance District, presented the flag. Carl J. Winkler, President, accepted the award. Lt. Commander L. F. Brozo, Commander, Third Naval Reserve Area, presented the "E" lapel insignia to two selected representatives of the men and women workers in the factory.

E. T. Ingham, manager Sales Promotion and Advertising, The American Brass Company, Waterbury, Connecticut, reports the company supplies copper, brass and bronze materials for making ammunition; also instruments and other equipment for guns, airplanes, ships and tanks.

All present business consists of orders for brass and copper for direct or indirect war purposes. New and improved machinery has been installed to increase production.

98.2 per cent of all employees are now purchasing bonds, the value of which equals 10 per cent or more of the payroll.

Over 3,500 employees are now in the Army, Navy, Marines, or Government Service. Many of these men have seen action.

Clarence Blum, a veteran of the last war, left Milcor Steel Company on June 8, 1942, and is now a Captain in the Air Corps and stationed at Sioux Falls.

B. P. Edelman, General Sales Manager, U. S. Air Conditioning Corporation, Minneapolis, Minnesota, reports their entire production is now for Army, Navy Maritime Commission, Air Corps and for Defense Plants. Contracts include:

- Fans, blowers and unit heaters for U. S. Navy and Maritime Commission
- Fans, blowers and coils for defense plants, airplane factories, bomber plants, air bases, and army camps

The company has a regular payroll deduction plan with employees pledging 10 per cent or more of wages and salaries for the purchase of war bonds.

Anchor Post Fence Company, Baltimore, Maryland—M. J. Donahue—reports all of their business consists of war orders. Information, however, is restricted. They have been awarded the Army-Navy "E." The following are now in service:

- D. G. Day, Oil Burner Sales, New England, is now with WPB
- James Stoll, Fence Sales, Cleveland, is now at Chemical Warfare Officers Candidate School
- James B. Munson, Fence Sales, Chicago, is now in Marine Officers Candidate School
- Valentine W. Heggie, Vice President, in charge of manufacturing, reports April 27 as Lieut. Commander in Navy.

William J. Lohman, Chelsea Fan & Blower Co., Inc., Irvington, N. J., reports a number from their shop now in service. One has seen service in the Solomon Islands.

All of their business now consists of war orders. Hundreds of fans and blowers have gone to over 245 government projects. Also, a great many other things of confidential nature. All employees are purchasing war bonds.

The Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa., has arranged for a $200,000,000 credit, largest in the Company's history, to finance its war production contracts, according to George H. Bucher, President.

During 1942, the Company's plants in 25 cities produced approximately $500,000,000 worth of equipment, practically all of it earmarked for the war effort. In the same period Westinghouse received orders amounting to more than one billion dollars. Westinghouse war equipment includes propulsion units for ships, fire control devices for guns, instruments and parts for planes, communication equipment, in addition to its regular lines of turbines, generators, motors and other apparatus for war industries.

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the "Stronghearted"
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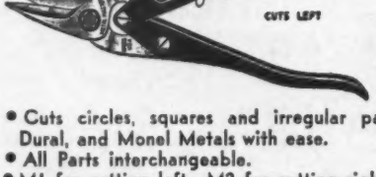

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plan duct work made up from the contractor's sketches and assembled for inspection and then knocked down and delivered to the contractor on the job. The flat board sheets, cut to size are metal screwed to ¾-inch quarter-round running the length of the duct. Elbows are square with turning vanes, transitions are possible by properly cutting the board to reduce the dimension.

Cost Per Square Foot

In ducts made of Careyboard, up to 36-inch in largest dimension, the cost to the contractor is approximately 20 cents per square foot, completely fabricated and delivered knocked down. This is for material 3/16-inch thick. One quarter-inch thick material, up to about 60 inches in largest dimension, costs the contractor about 22 cents per square foot. Ducts with the largest dimension exceeding 60 inches and requiring 3/8-inch thick Careyboard costs the contractor about 30 cents per square foot. It is estimated that on ducts where the largest dimension is 36 inches, it will cost the contractor about 15 cents per square foot to reassemble and erect the knocked-down duct work.

Small Business Organizations

The banquet speaker was C. D. Hunter, of the National Advisory Board of the Small Business Organization, Chicago. Mr. Hunter explained how important and how large is that segment of American Business which is currently termed "Small Business." This includes the retailer, the wholesaler, the small manufacturer, but not the professional man and constitutes, in general, that part of American Business with which the average householder conducts most of his business transactions.

Small business has been, said Mr. Hunter, a "stepchild" and while small business has received much "lip-service" from government, small business has received too little actual help. Yet America can not conduct its normal living without small business and so Washington is now beginning to realize that without Small Business the economy of the country seems likely to collapse. Mr. Hunter explained that when small business is completely unorganized, it obtains very little hearing in Washington, where "pressure" groups make their needs known through lobbying and representation plus intelligent presentation of facts to the proper persons and organizations in the Federal government. What is needed, at the moment, said the speaker, is a larger representation of industries through association with the Small Business effort. Any business group, pointed out the speaker, which feels that it is not obtaining a fair hearing on its problem would do well to join hands with the Small Business organization.

1943 Objectives

President Elect Varden of Albany in accepting the presidency for 1943 suggested that the association might do well to set out one or two objectives and suggested that one such objective might be the stimulation of sales of insulation by heating and roofing contractors since insulation has now become a very important factor in heat conservation and, in roofing, in eliminating many of the problems of condensation, heat loss, and long life for the roofing materials. President Varden also suggested that the association might pay some attention to ways and means of setting up bidding agencies whereby a contractor could be assured that his bid and estimate will receive a fair consideration.

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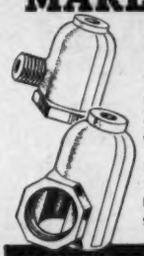

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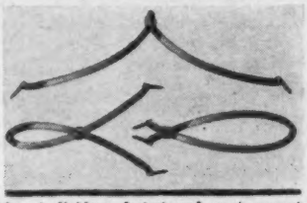

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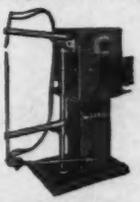

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4844 W. Huron St., Chicago, Ill.

Classified

FOR SALE

FOR SALE—One late model Lockformer. Capacity 22 gauge. Address Queen City Heating Co., 221 So. First Avenue, Sioux Falls, S. D.

POWER BRAKE FOR SALE—10 Ft. Geo. Ohl Power Brake. 3/16" Capacity. In good condition, complete with 25 hp Motor. Address The Riester & Thesmacher Co., 126 West 25th St., Cleveland, Ohio.

WANTED

WANTED: Good used Blowing Equipment for blowing rockwool insulation into homes. Address Western Furnace, Inc., Tacoma, Wash.

PROMPT SHIPMENT FROM STOCK

APRON BRAKES
POWER: 10'10 ga. 8'10 ga. 4'¼"; 6'12 ga.; HAND: 8'16, 8'18, 6'18, 6'16, 4'16 ga.; BOX & PAN: 7'14; 5'14 ga.;

PRESS BRAKES
D&K: NO. 255; 6'14 ga.; 10' POORMAN; OHL: 10'14 ga.; 4'16 ga.; 5'14, 66" 14 ga.;

FOLDERS
20" and 30" PEXTO & NIAGARA;

FLOOR LATHES
30' PIT LATHE; 156" face plate; 20"x8', 18"x8' MONARCH; 14"x8' L&S; 16"x8' & 15"x5' FLATHER; 16"x6' AM;

MISCELLANEOUS ITEMS
No. 2—48 CINCINNATI 2 SP. VERT. BROACH: With motors; New 1937;
No. 2½-B KEARNEY TRECKER VERTICAL MILL;
No. 2 B.&S. VERTICAL MILL;
No. 2 BROWN & SHARPE UNIV. MILL;
Nos. 2-B & 3 MANVILLE THREAD ROLLERS: ¼" capacity;
½" & ⅝" SHUSTER WIRE STRAIGHTENERS, 24 & 30 Ft. cutoffs;

OBI PRESSES
Nos. 5, 4 & 3 CONSOLIDATEDS;
No. C-5 FERRACUTE; No. 4 BLISS; No. 3-A R&K;
Nos. 18, 19, 20 & 21 BLISS;

DOUBLE CRANK PRESSES
No. 3-C BLISS; 5-⅞" stroke; 58¾" between;
No. 4-80 W&W 10" stroke; 4" shaft;
No. 91-B TOLEDO; 6" stroke; 32½ bet.;

POWER ROLLS
7½ FT. 10 ga. N.I.A.; 8 Ft. 20 ga. NIA.;
ANGLE: 6x6x¾" WICKES; M.D.;

SHEARS
ANGLE: 6x6x¾" LONG & ALSTATTER;
POWER: 10'14 ga. OHL;
ROTARY: No. 2-A QUICKWORK; 10 ga.;

SPOT WELDERS
250 KVA FEDERAL PRESS TYPE PROJECTION TYPE; Toggle movement of ram;
20 & 30 KVA GIBB PRESS TYPE;
NEW 7½ to 50 KVA REX WELDERS;
BUTT: 55 KVA SWIFT; 35 KVA GUN.

INTERSTATE MACHINERY CO., INC.—YARDS 5800
1433 W. PERSHING RD., CHICAGO, ILL.

SERVICE SECTION: Rates for display space similar to above in Service Section are $5.00 per inch per insertion. One-inch minimum space accepted. **Classified Section:** Rates for classified advertising are 5 cents for each word including heading and address. Count seven words for keyed address. Minimum $1.00 for each insertion. Cash must accompany order.

Index to ADVERTISERS

Accurate Mfg. Works ..... *
Acme Electric Welder Co. 79
Adams Co., The 70
Aerofin Corp. 7
Air Control Products, Inc. 13
Air-Maze Corp. ..... *
Airtherm Mfg. Co. 67
Allen Co., Inc., L. B. 80
Allen Corp. 77
Alphil Spot Welding Co. 85
American Air Filter Co., Inc. ..... *
American Blower Corp. ..... *
American Brass Co. 8
American Radiator & Standard Sanitary Corp. ..... *
American Rolling Mill Co., The 12
Armstrong Company, The ..... *
Auer Register Co. 80
Automatic Humidifier Co. ..... *
Automatic Products Co. ..... *

Barber Gas Burner Co., The 79
Bard Mfg. Co. ..... *
Bayley Blower Co. 79
Benson Co., Inc., Alex R. 85
Berger Bros. Co. 79
Bethlehem Steel Co. 40
Beverly Shear Co. 80
Black & Decker Mfg. Co. 79
Blocksom & Co. 79
Brauer Supply Co., A. G. 80
Bremil Mfg. Co. 81
Breuer Electric Mfg. Co. ..... *
Burt Mfg. Co. 73

Carnegie-Illinois Steel Corp. 10
Century Electric Co. ..... *
Cheney Metal Products Co. 62
Clarage Fan Co. 73
Conco Corp. 83
Condensation Engineering Corp. 78
Cotta Transmission Corp. 83
Crescent Tool Co. 16

Dewitt Hotels ..... *
Densewood Corporation ..... *
Des Moines Stove Repair Co. 81
Detroit Lubricator Co. 59
Dreis & Krump Mfg. Co. 81

Eisler Engineering Co. 85
Elgo-Shutter & Mfg. Co. ..... *
Evans Machine Company, L. R. ..... *
Excel Heating & Air Conditioning Co. . 69

Farrelloy Company, Inc. 76
Field Control Division 68
Fireline Stove & Furnace Lining Co. .. *
Fitzgibbons Boiler Co., Inc. ..... *
Forest City Foundries Co. ..... *
Frederick Iron & Steel Co. ..... *

Gehl Bros. Mfg. Co. 71
General Blower Co. 85
General Controls ..... *
General Electric Co. 14
Gerett Corp., M. A. 71
Gillen Co., J. L. 82
Grant Wilson, Inc. 6

Harrington & King Perforating Co. 74
Hart & Cooley Mfg. Co. 66
Heil Co. 83
Henry Furnace & Foundry Co., The ... 81
Hussey & Co., C. G. ..... *

Ilg Electric Ventilating Co. ..... *
Illinois Testing Laboratories, Inc. 82
Independent Register Co., The 61
International Heater Co. ..... *
Interstate Machinery Co. 85

Jackson & Church Co. ..... *
Janette Mfg. Co. 71
Johnson Co., S. T. ..... *

Lafayette Hotel ..... *
Lamneck Products, Inc. .. Inside Front Cover
Leader Iron Works, Inc. 82
Libert Machine Co. ..... *
Lincoln Electric Co. ..... *
Lockformer Co. 64

Marley Co., The 85
Marshalltown Mfg. Co. ..... *
May-Fiebeger Co. 72
May Oil Burner Co. ..... *
Mercoid Corp., The 83
Meyer & Bro. Co., F. ..... *
Meyer Furnace Co. ..... *
Milcor Steel Co. ..... *
Minneapolis-Honeywell Regulator Co. .. *
Mitchell & Smith, Inc. ..... *
Monmouth Products Co. ..... *
Morency-Van Buren Div., Scovil Mfg. Co. ..... *
Morrison Products, Inc. ..... *
Mt. Vernon Furnace & Mfg. Co. ..... *
Mueller Furnace Co., L. J. ..... *

Niagara Machine & Tool Works 63
Norge Heating & Conditioning Div., Borg-Warner Corp. ..... *
Northwestern Stove Repair Co. ..... *

Olsen Mfg. Co., C. A. 30
Osborn Co., J. M. & L. A. 5
Owens-Corning Fiberglas Co. 11

Pacific Airmax Corp. ..... *
Parker-Kalon Corp. 51
Patten Co., J. V. ..... *
Payne Furnace & Supply Co. 79
Peck, Stow & Wilcox Co., The 65
Peerless Electric Co., The ..... *
Peerless Foundry Co. 84
Penn Electric Switch Co. 9
Penn Tool Co. 85
Perfex Corp. ..... *

Quincy Stove Mfg. Co. 82

Randall Graphite Products Corp. 72
Register & Grille Mfg. Co. ..... *
Reiner & Campbell Co., Inc. 85
Republic Steel Corp. ..... *
Research Products Corp. ..... Outside Back Cover
Rock Island Register Co. ..... *
Round Oak Co. ..... *
Rybolt Heater Co. ..... Inside Back Cover
Ryerson & Son, Inc., Joseph T. 84

Sall Mountain Co. 79
Schwitzer-Cummins Co. 76
Scovil Mfg. Co. ..... *
Skilsaw, Inc. 15
Southwest Hotels ..... *
Standard Stamping & Perforating Co. . *
Stanley Electric Tool Div., The Stanley Works 68
Sturtevant Co., B. F. 84
Superior Sheet Steel Co. ..... *
Swartwout Co. 71
Syncromatic Air Conditioning Corp. ... 83

Torrington Mfg. Co. ..... *
Tuttle & Bailey, Inc. ..... *

U. S. Air Conditioning Corp. 3
Unique Manufacturing Co., Inc. ..... *
United States Gypsum Co. ..... *
U. S. Register Co. 75
U. S. Steel Corp. 10
U. S. Steel Supply Co. 10
Universal Power Corp. 85

Wagner Electric Corp. ..... *
Waterloo Register Co. ..... *
Waterman-Waterbury Co., The ..... *
Westinghouse Electric & Mfg. Co. ..... *
White Mfg. Co. 82
White-Rodgers Electric Co. ..... *
Wise Furnace Co. ..... *
Whitney Mfg. Co., W. A. 77
Whitney Metal Tool Co. 75
Williams Oil-O-Matic Heating Corp. .. *
Williamson Heater Co. ..... *
Wilson, Inc., Grant 6
Wiss & Sons Co., J. 84
Wodack Electric Tool Corp. 85
Wood Industries, Inc., Gar 74

Zink Co., John ..... *

Firms represented in this issue are identified by the folio of the page on which their advertising appears. Advertising which appears in other issues is marked with an asterisk.

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Uncontrolled, these great elements can be man's most devastating forms of destruction. Harnessed and directed, they serve him and contribute to his life, health and well being.

All three of these elements play a most important part in modern air conditioning—fire for comfortable heat, air for its circulation and water for its proper humidification. How well these forces are teamed to work together effectively depends, of course, on the scientific designing of the air conditioning equipment.

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